

Approvals:

Ronald C. Broxton  
State Coordinating Officer

Jon K. Huss  
Federal Coordinating Officer

## JOINT MISSION SCOPING ASSESSMENT

Interagency Recovery Coordination  
FEMA DR-4435 MO / DR-4451-MO  
December 2019

PAGE INTENTIONALLY LEFT BLANK



## Table of Contents

Executive Summary .....	5
Background Information .....	5
National Disaster Recovery Framework .....	7
Missouri Disaster Recovery Framework .....	8
Integration of the NDRF and the MDRF .....	8
Mission Scoping Assessment .....	11
I. AGRICULTURE .....	17
Agriculture State – Federal RSF Team Mission Statement .....	17
Core Actions .....	18
Initial Assessment .....	18
Analysis and Impacts .....	19
Known Issues .....	23
Recovery Needs .....	24
Recovery Strategies for Considerations .....	24
II. COMMUNITY PLANNING & CAPACITY BUILDING .....	27
CPCB State – Federal RSF Team Mission Statement .....	27
Core Actions .....	28
Analysis and Impacts .....	30
Known Issues and Recovery Needs .....	31
Recovery Opportunities and Recommendations .....	38
III. ECONOMIC .....	43
Economic State-Federal RSF Team Mission Statement .....	43
Core Actions .....	44
Analysis and Impacts .....	46
Known Issues .....	54
Recovery Needs .....	55
Recovery Strategies / Considerations .....	57
IV. HOUSING .....	60
Housing State – Federal RSF Team Mission Statement .....	61
Core Actions .....	62
Analysis and Impacts .....	65
Known Issues .....	66

Recovery Needs .....	69
Recovery Strategies for Consideration .....	69
V. INFRASTRUCTURE SYSTEMS .....	73
Infrastructure State- Federal RSF Team Mission Statement.....	73
Core Actions .....	74
Analysis and Impacts .....	74
Known Issues .....	80
Recovery Strategies / Recommendations.....	81
VI. NATURAL AND CULTURAL RESOURCES .....	95
NCR State-Federal RSF Team Mission Statement .....	95
Core Actions .....	96
Analysis and Impacts .....	97
Known Issues .....	101
Recovery Strategies for Considerations.....	102
ANNEXES.....	107
Community Conditions Assessment (CCA) Methodology .....	107
Infrastructure Related Articles .....	111
References.....	117

## Executive Summary

Extensive flooding and rainfall from March 2019 thru July 2019 resulted in disaster events that were declared under two separate declarations. DR 4435 covering the period March 11, 2019 thru April 16, 2019 addressed the straight-line winds and flooding, while DR 4451 covers the period April 29, 2019 thru July 5, 2019 which includes tornadoes that ravaged the capital of Jefferson City, straight-line winds, and flooding.

An Advanced Evaluation (AE) was conducted in August of 2019 and based on its findings the following Recovery Support Functions were recommended for activation and deployment: Community Planning and Capacity Building, Economics, Housing, Infrastructure, and Natural and Cultural Resources. The activation and deployment of a USDA Advisor (Agriculture) was also recommended. The primary purpose of the AE was to determine if other Federal agencies would be needed to assist and support the state by conducting mission scoping assessments wherein gaps, cross-cutting impacts, and capacity needs would be identified, and to ascertain if the State might benefit from the leveraging of federal agency resources for recovery. The State, having its own RSF structure, submitted a letter of request stating its need for the Federal RSF structure to assist with gathering data and conducting assessments, and federal assets for recovery; this letter was added as an addendum to the final AE report.

State and Federal RSF's jointly affirmed the findings of the AE via the assessments and identification of impact issues conducted for the MSA in which they have provided initial analysis of issues, opportunities, and challenges. Current and anticipated disaster impacts were identified and analyzed with specific attention focused on the ability of local agencies and governments to initiate and sustain viable recovery efforts.

This document is respectfully submitted by Jessica Catron, Missouri State Disaster Recovery Coordinator (SDRC), and Heriberto Martinez, Federal Disaster Recovery Officer (FDRO).

## Background Information

Heavy snowfall in the northern plains during the winter of 2018 -2019 brought more than two to five times the amount of snow that normally falls. This set up conditions for record long-term flooding along the Missouri and Mississippi rivers in March and April. In mid-April, when temperatures rose and snow melt occurred, although there was some receding of the rivers, the combination of melting snowpack from the northern plains coupled with rainfall that was 200-300% above normal, set the stage for major river flooding into May. The high crests and prolonged period of flooding caused significant strain on area levees resulting in inundated coastlines and farmlands.

According to the National Weather Service, the first six months of 2019 were among the ten wettest January thru June periods on record for the Mississippi River Valley states, the Ohio Valley, and the Great Lakes. May 2019 was, historically, the third wettest month on record, and during that month 45 confirmed tornadoes hit the State. The five consecutive months of flooding in the State was historic in terms of the length of time, and in some areas of the state, was historic in terms of river crest height.

On May 17-18, first responders performed water rescues necessitated by flash flooding in Jasper and Newton counties. A severe storm during that time frame caused campers to be flipped in the town of Wheatland in Hickory County and sent four people to the hospital. Three days later, on May 21<sup>st</sup>, Governor Parson declared a state of emergency in response to the continuing severe weather that included forecasts for tornadoes, more straight-line winds, hail, heavy rainfall and worsening flooding. Areas that were not in flood zones experienced water inundation from ongoing, heavy rainfall and water seepage due to over saturation.

By June, in the town of Hannibal, the Mississippi River had crested at 30.15 feet, the second highest cresting in the State's history. In Canton, Missouri the river crested at 27.11 feet, which was the third highest cresting record in history for that portion of the river. At that point in the disaster event the flooding had caused the closure of approximately 382 roads in 56 counties. The Missouri National Guard was activated and deployed to assist with sandbagging and flooding response. On June 6, the Governor requested FEMA assist with conducting PDA's in 58 counties. A request was made for a major disaster declaration on June 24, at which time more than 1650 primary homes had been inspected via PDA's with 953 of those found to have been destroyed or sustained major damage. Assessments further showed that 125 of 251 businesses examined were destroyed or had sustained major damage. On July 9, President Trump granted a major disaster declaration for the state of Missouri for 20 counties affected by flooding, tornadoes and severe storms. The extent of flooding and damages were significant, and by July 29 the State requested FEMA consider an additional 21 counties and provide PA to 68 counties. At the height of the weather events more than 470 roads and bridges were closed, and multiple businesses were lost.

By August 4, 2019, DR- 4451 had designated a total of 78 counties in the State for FEMA program assistance [PA only - 52; IA only -10; both PA & IA -16]. As the inclement weather had been ongoing, this caused some overlap in impacts and damages and the assessments of those, leading to additional counties requesting to be added to the PA program. September 30 FEMA approved the addition of 14 more counties and the City of St. Louis. This amendment to the declaration also resulted in changes in the number of counties eligible for both PA and IA, wherein that number rose from 16 to 22; and the number of counties eligible for only PA increased from 52 to 61; while the number of counties eligible for only IA decreased from 10 to 4 as several of the originally designated counties for IA were now eligible for both PA and IA. The deadline for registration for FEMA assistance was September 9 with more than 1480

households in 26 counties approved for IA and having received more than \$7 million. The changes in the FEMA programs numbers came about as a result of assessments which led to 5 amendments to the initial declaration for DR-4451.

## National Disaster Recovery Framework

The National Disaster Recovery Framework (NDRF) is intended to promote effective recovery from large scale or catastrophic incidents and enable coordinated support for presidentially declared impacted states, tribes and local jurisdictions. Its structure is flexible and adaptable for disaster recovery managers who must operate in a unified and collaborative manner and it focuses on how best to restore, redevelop and revitalize the health, social, economic, natural and environmental fabric of the community as well as build a more resilient nation.

The framework defines core recovery principles and the roles and responsibilities of recovery coordinators and stakeholders. Its structure facilitates communication and collaboration among all stakeholders and provides guidance for pre- and post-disaster recovery planning. The NDRF describes the overall process by which communities can capitalize on opportunities to rebuild stronger, safer and smarter.

The NDRF establishes Recovery Support Functions (RSFs) based on sector and core capability. Each RSF is responsible for coordinating federal actions in support of these core capabilities. In FEMA-4435-DR-MO and FEMA-4451-DR-MO the following RSFs were integrated into the Joint Field Office:

1. **Agriculture** led by USDA as a unique RSF to address the significant damages to the State's agricultural sector and the associated impacts on all other sectors
2. **Community Planning and Capacity Building (CPCB)** led by FEMA
3. **Economic** led by EDA
4. **Housing** led by HUD
5. **Infrastructure** led by USACE
6. **Natural and Cultural Resources** led by the Department of the Interior.

*Note: Health and Social Services was not stood-up those elements are currently integrated through all other RSFs as appropriate.*

RSFs provide a structure to facilitate problem-solving, improve access to resources and foster coordination among state and federal agencies, non-governmental partners and other stakeholders. Each RSF has a designated coordinating agency along with primary agencies and supporting organizations with programs relevant to each RSF functional area.

## Missouri Disaster Recovery Framework

Based on the National Disaster Recovery Framework (NDRF), the Missouri Disaster Recovery Framework (MDRF) incorporates proven recovery principles, aligns with the national coordination structure to better address gaps and needs, avoid duplication of efforts, and leverage resources during long-term recovery. The coordination structure identifies leadership positions, defines roles and responsibilities, and encompasses all functions of a community.

Key leadership positions include State and Federal Disaster Recovery Coordinators, Local Disaster Recovery Managers, and Recovery Support Function Coordinators. Six Recovery Support Functions (RSFs) address the core capabilities needed for a community to recover successfully from a disaster or other adverse event. At the State level, the following RSF areas have been activated for DR-4435 and DR-4451:

- **Economic** led by Missouri Department of Economic Development
- **Health and Social Services** led by Missouri Department of Health and Senior Services
- **Housing** led by the Missouri State Treasurer's Office and MHDC
- **Infrastructure Systems** led by the Missouri Department of Transportation
- **Natural and Cultural Resources** led by the Missouri Department of Natural Resources
- **Community** (local management and planning capacity)
- **Agriculture** led by the Missouri Department of Agriculture.

Although the state of Missouri has been engaged in building the Missouri Disaster Recovery Framework (MDRF), to mirror the National Disaster Recovery Framework (NDRF) since 2016. DR-4435 and DR-4451 are the first Presidentially declared disasters where all six of Missouri's Recovery Support Functions, and a full-time dedicated State Disaster Recovery Coordinator are actively working alongside federal and state partners toward long-term recovery.

## Integration of the NDRF and the MDRF

At the time of the 2019 disasters (DR-4435 and DR-4451), the State's efforts were focused on refining their Recovery Support Function (RSF) Annexes. Each Annex would detail descriptively the recovery process, anticipated partners and expected outcomes to be achieved during the disaster recovery phase. However, with the activation of the Interagency Recovery Coordination (IRC) Team; the State welcomed the opportunity to advance their sustainability and build internal capacity and capabilities to lead Recovery in the future.

The State Disaster Recovery Coordinator (SDRC) worked with both the FCO and IRC Leadership to develop an integrative and collaborative process. First, the State codified their



request for assistance by attaching to the Advance Evaluation a detailed letter laying out a rationale for activation of five of the six RSFs, to include an AG/USDA Advisor.

Secondly, the SDRC working side-by-side with IRC Leadership established a process to ensure learning was transferred. The process began with a formal Meet and Greet in October 2019, in which State and Federal RSF teams were created, consisting of State RSF Lead, Federal RSF Field Coordinators, and appointed Recovery Coordination Group (RCG) Liaison. The second phase of this joint planned approach was the establishment of weekly working sessions, in which the State and Federal RSF Teams intentionally come together to discuss where they are in the process, share ideas, synthesize information and vet them according to the State's identified priorities and goals. This phase of the process began in November and will continue throughout the Mission.

The third, and final Phase of the integrated process will be the convening of three Whole Communities Meetings, in which a broader audience will be assembled to hear from the RSF Teams regarding findings, challenges, gaps, considerations and potential resources available for the State's Recovery. The intent of these jointly held meetings will be to ground truth initial findings with key stakeholders, received their input and buy-in to ensure their support and affirmation at each stage of the Recovery process. The Whole Community meetings will mirror the three traditional phases of an IRC Mission. They will focus on the Mission Scoping Assessment (MSA), Recovery Support Strategies (RSS) and Implementation deliverables. Each meeting has been calendared, November 25, January 6, and February 2, accordingly.

Both State and Federal Leadership, would work collaborative to step the State RSFs through this process, with an eye towards the State gaining enough capacity to either conduct the process on their own or to lead it, bringing FEMA and other Federal partners to the table as needed.

A cornerstone of effective coordination and collaboration is leveraging resources to maximize outcomes for the whole community's benefit. Plan integration supports risk reduction through various policy, planning, and development measures, before, during, and after a disaster or other event. DR-4435 and DR-4451 provided the opportunity for collaboration, engaging State and Federal RSF's in the disaster impact scoping assessment. These collaborative efforts provided a more complete picture, to enable better decision making. The distilled data and the joint analysis are presented in this document with the goal of communicating the findings and to assist the development of meaningful recovery strategies.

PAGE INTENTIONALLY LEFT BLANK

## Mission Scoping Assessment

The purpose of the Mission Scoping Assessment (MSA) is to gather and document impact and needs in local communities to create a blueprint for federal, state, local governments and other organizations for long-term recovery efforts. The goal is to align resources and accelerate the recovery process to achieve mutually defined results that support the communities of Missouri.

The following issues represent the top recovery challenges identified and agreed upon by State and Federal RSF's, that require close coordination and collaboration with State and Federal partners.

### Agriculture

1. ***Full impact of flood cannot be fully assessed due to crops/land still under water:*** the western side of the state, running from the far northwest corner down to the southwest corner has an estimated 30,000 acres that yet remain under water.
2. ***Crop production reductions:*** more than 1.2 million acres were unplantable; 30,000 acres remain inundated, and delayed crop planting and harvesting have all affected crop production and reductions in crop yields.
3. ***Mental health:*** previous and ongoing flooding, financial loss, and concern for the future can compound stress, depression and mental health issues for farmers and their families.
4. ***Data and reporting of impacts:*** Due to late application deadlines, lengthy data request processes, and additional research time required due to inaccurate information being received, accurate and timely quantitative data has been, at times, difficult to obtain.

### Community Planning and Capacity Building:

1. ***Limited availability and access to resources:*** many rural and less densely populated communities face challenges in resource availability and access due to financial constraints, local government staffing shortages, and other factors.
2. ***Limited understanding of interdependencies between sectors*** (need for enhanced cross-sector-coordination): limited understanding of the complexity and interdependency between levee systems, farmland, and ecology, and their impacts on the various sectors that drive the community.
3. ***Limited recovery planning experience:*** local government staff of many rural areas and smaller communities are residents without experience in recovery and other disaster planning beyond response.
4. ***Limited pre-disaster recovery and resilience planning:*** largely due to the need for enhanced capacity, communities need technical assistance to conduct and complete pre-disaster recovery and resilience.

## **Economic**

1. ***Agriculture and Agribusiness***: ongoing flooding has made it difficult to accurately assess economic losses and long-term economic impacts.
2. ***Transportation***: disruptions in transportation systems included road and bridge closures which created the need for extensive detour routes, which in turn, caused employment disruption and displacement of populations in response to longer commute times.
3. ***Tourism***: impacts to components of this industry included: lodging, retail, restaurants, recreation, etc. It has been difficult to assess extent of impacts.
4. ***Industry and small business***: disruptions to workforce and relocation of workforce population has economic impacts upon industries and small business.

## **Housing**

1. ***Increased need for affordable, accessible housing***: Prior to the disaster many rural and densely populated areas of the State had a shortage of housing that could be rented, purchased, or leased by residents at given market price points. The disaster has exacerbated this shortage.
2. ***Increased need for sustainable/resilient housing***: disasters reduce already stressed housing stock, but also enhance the need for more sustainable and resilient housing.
3. ***Increased mitigation efforts to prevent population loss***: population loss is a considerable concern after disasters due to impacts to transportation, housing loss, and population relocation in response to same.
4. ***Expand regional capacity and funding for housing development***: to improve upon the aforementioned challenges and issues, regional capacity and funding for housing development must be expanded.

## **Infrastructure**

1. ***Flood protection vulnerability: fed & non fed, private***. Inventory of private levee systems will help. Drainage and levee districts can apply for CORPS program 8499.
2. ***Unmitigated infrastructure impacts***: Fed highways are under the purview of the Federal government, but the state can request funding. Also, focusing on resiliency may result in quicker and less costly repairs.
3. ***Need for broader river/ water management***: enhanced river and water management can help with flooding and levee issues.

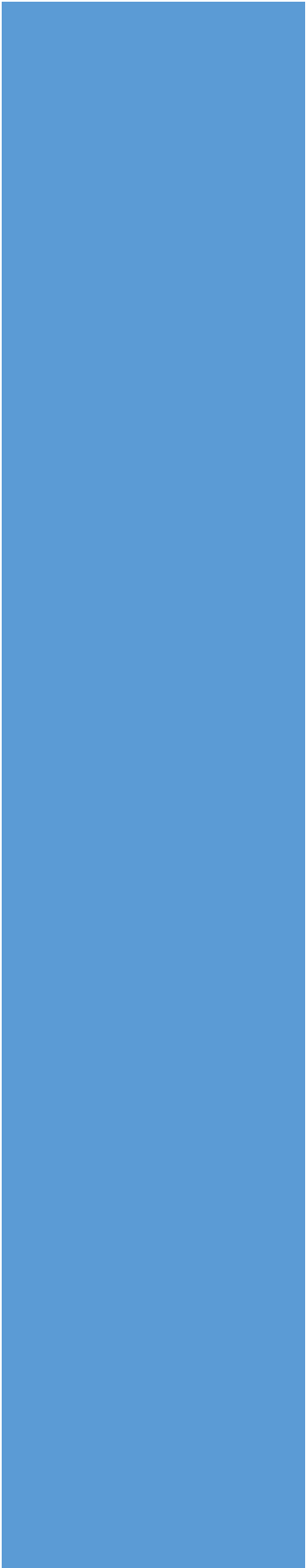
## **Natural and Cultural Resources**

1. ***Source water quality***: Impacts to water systems result in decreased availability of potable water, contamination of ground water, can cause pumping stations and junction boxes to become inaccessible and/or in operational.

2. ***Erosion and sediment control; riparian restoration:*** Continued flooding results in land loss – erosion; increases in sediment on farm and other land impact the ability of landowners to utilize land in profitable manner further impacting economy.
3. ***Flood impact on wildlife habitats:*** Flooding devastates wildlife habitats, and the balance of established ecosystems, resulting in loss of breeding grounds and consequently, causing a reduction in the vast number of diverse species.



PAGE INTENTIONALLY LEFT BLANK



PAGE INTENTIONALLY LEFT BLANK

## I. AGRICULTURE

### Agriculture State – Federal RSF Team Mission Statement

The significant damages and impacts to the State’s agricultural sector and all other sectors of the economy, infrastructure, and communities indicate the need to mission assign a U.S. Department of Agriculture as an RSF.

The mission of the Agriculture RSF is to coordinate with local and state agencies to provide funding and technical assistance to encourage the sustained recovery of agricultural land, communities, housing, infrastructure, and business. Identifying USDA federal programs and funding gaps, disaster affected residents, municipalities, farmers, and food systems can benefit from a plan of action for recovery efforts to support the resiliency of those impacted and a place of stabilization from which to grow. The table below depicts Agriculture Partners by primary agency, supporting agency and local agency.

<b>Agriculture Partners</b>	
<b>Coordinating Agency</b>	
United States Department of Agriculture (USDA)	
<b>Primary Agencies</b>	
Farm Services Agency (FSA)	
Natural Resources Conservation Service (NRCS)	
Food and Nutrition Service (FNS)	
Food Safety and Inspection Service (FSIS)	
Risk Management Agency (RMA)	
Rural Development (RD)	
<b>Supporting Agencies</b>	
Missouri Department of Agriculture	
University of Missouri Extension Service	
Small Business Administration	
Missouri Department of Economic Development	
<b>Local Agencies</b>	

Chamber of Commerce
Municipalities
Missouri Economic Development Districts

## Core Actions

State and Federal RSF's agree that agriculture drives Missouri's economy. Therefore, multi-functional coordination between federal and state agencies requires their ongoing collaboration to address the agricultural issues resulting from the disaster.

The Agriculture RSF will identify funding opportunities with expertise drawn from federal, state, local department agencies and private sector partners; technical assistance, and capabilities to leverage sustainable hazard mitigation strategies that lessen impacts to agricultural farm land and communities. The Agriculture RSF will identify strategies inherent to the recovery process with expertise drawn in partnership from federal, state, local department agencies and private sector partners. Communication amongst all involved will be essential throughout the recovery process, ensuring ongoing dialogue and the sharing of information to complete the mission assignment.

## Initial Assessment

Missouri is home to 95,000 farms, totaling 27,700,000 acres (USDA-ERS). These acres support



*Figure 1: 2019 flood - most of the Kaiser Family Farms under water in Carroll County.*



A significant portion of Missouri's agricultural land has been affected by 2019's heavy and, at times, record-setting precipitation. While delayed planting and grain loss are known issues, some losses are still being calculated and the full effect of the economic impact will take years to quantify, especially with approximately 30,000 acres still underwater (Geist, 2019). The agricultural impacts of this wet weather have been numerous, including closures and damage to roads and highways, nitrogen fertilizer loss, poor weed control, and delayed crop planting and harvesting.

In October, initial assessments from the State Department of Agriculture reported that Missouri experienced flooding to approximately 1.2 million acres of farmland, with many fields being unplantable over two seasons - spring and fall (Anderson, 2019). The State Department of Agriculture later determined that in Missouri, 1.58 million acres of farmland were either unplantable or unable to be harvested during the Spring and Fall 2019 planting seasons. (Risk Management Agency, 2019) In the upper Northwest portion of the state, more than 74,000 acres alone were inundated by flood waters. Rain and heavy snow melt in the upper Midwest caused the Missouri River to surge at the end of May. This surge damaged levees on both the Missouri and Mississippi rivers washing out miles of farmland in the river bottoms from Atchison County to Franklin County on the Missouri river, and Clark County to Lincoln County on the Mississippi River (Crowley, 2019).

Missouri, a valuable and diverse agricultural state, was hit hard as transportation and infrastructure were impacted by the flooding. A majority, if not all, of the roads, bridges, levees, rails, and rivers in the hardest hit areas of the state were impacted by this disaster. Lack of transportation not only creates a detriment to farmers but impacts fertilizer and seed dealers, supply stores, ethanol plants, farm equipment, hired farm laborers and the food supply. All these factors impact the local economy.

The Federal Emergency Management Agency (FEMA) designated 83 out of the 114 Missouri counties as eligible for public and individual assistance. Producers who suffered losses due to excessive rainfall and flooding that occurred after March 9, 2019 may be eligible for both the U.S. Department of Agriculture (USDA) Farm Service Agency (FSA) and the Natural Resource Conservation Services (NRCS) emergency loans and grants. These emergency programs can be used to meet various recovery needs including the replacement of essential items such as equipment or livestock, reorganization of a farming operation, or the refinance of certain debts.

## Analysis and Impacts

Farm Service Agency (FSA)

***On Farm Grain Storage Program:*** The application process for this program is currently open. Applications have been received, however further statistical data is expected before the end of the year (2019).

*Figure 2: Federal  
Emergency  
Management Agency:  
Grain spilled from  
flood-damaged grain  
bins - 2019 flooding*



***Emergency Conservation Program (ECP):*** As a result of the spring flood event, farmers and producers were faced with having to remove sand, silt, and various types of debris from their farmland. The Farm Service Agency received 2,506 applications for assistance with debris removal and clean up between April 2019 and June 2019. Atchison, Holt, Carroll and Ray counties, (four of the hardest hit for producers) account for 1,120 of these applications. Due to most of the fields in these counties still being underwater, only two of these applications have been processed to date. While waiting for the flood waters to recede, the farmer or producer could be working with their local FSA representative to aid in the recovery process (i.e. other USDA programs).

***Livestock Indemnity Program (LIP):*** This program provides assistance by compensating livestock owners for livestock deaths related to the flooding event. The program helps livestock owners that lost animals in the flood waters, and those animals that suffered injuries while being relocated, thus having to be sold at a reduced price. FSA received and processed 210 applications, totaling \$422,927. Of these 210 applications, 81 have been received from producers in the Northwest portion of the state (one of the hardest hit areas).

Natural Resources Conservation Service (NRCS)

***Emergency Floodplain Easement Program (EWP):*** This program allows the farmer to quickly address adverse impacts resulting from natural disasters. Application closing date was November 27, 2019. More statistical data is expected before the end of the year (2019).

***Emergency Watershed Protection Program (EWP) Floodplain Easement Option***

***(EWP-FPE):*** Through this program, the landowner can acquire an easement to reduce the threat to life and/or property. The landowners voluntarily agree to sell a permanent conservation easement to the United States through NRCS. Compensation is based on the value of the easement, as determined by an appraisal or market analysis. These easements may occur on public or private agricultural land or residential properties damaged by flooding and natural disasters.

As of November 2019, NRCS has received 137 letters of request by eligible entities. The total number of sites associated with these letters of request is estimated at 200, however they are still unable to evaluate many sites due to continuous flooding in the Missouri River floodplain. While \$2 million has been approved in 23 requests, this number is estimated to reach \$30 million when the sites, that are currently underwater, are accessible. NRCS has and will continue to play a vital role in the recovery effort for the State of Missouri. Routine engagements have already been organized. More statistical data is also expected before the end of the year (2019).

***Conservation Technical Assistance (CTA):*** Technical assistance is available from NRCS and its partners, to any group or individual interested in conserving natural resources and sustaining agricultural production in the state at no fee to the applicant. Although the CTA program does not include financial or cost-share assistance, it can assist land owners in developing conservation plans, which may serve as a springboard for easement conservation programs provided by USDA financial assistance programs and other federal, state, and local programs. The CTA program would benefit with more visibility through regionally organized outreach programs.

***Environmental Quality Incentives Program (EQIP):*** Farmers and ranchers who suffered damage to working lands, and/or livestock mortality because of a disaster may seek relief through this program. Missouri did not experience a significant loss to livestock, as evidenced by NRCS not receiving any applications for animal carcass handling.

NRCS has and will continue to play a vital role in the recovery effort for the State of Missouri. Routine engagements have already been organized. Statistical data is expected before the end of the year (2019).

***Cover Crops for Disaster Assistance Initiative:*** Farmers who could not plant their crops due to the flooding event can apply for technical and financial assistance through this program. This initiative helps farmers maintain soil health by planting a cover crop, as an alternative to letting fields go unplanted and uncovered. Missouri NRCS received 248

EQIP applications for the Cover Crops for Disaster Assistance Initiative. The total request for funds is \$2,500,000.00. Of the 248 applications, 81 have been obligated into contracts totaling \$816,762.00. Although the Cover Crops for the Disaster Assistance Initiative seems nominal to the dollars compared in the aggregate; the impact that the dollars play is significant in the recovery efforts of the State of Missouri. Engagement meetings have begun with the respective offices within USDA and will continue as completion of the applications progress and the total allotment of funds is expended. Statistical data is expected before the end of the year (2019).

## Rural Development (RD)

The strength of Missouri's rural communities is essential to the strength of its agricultural industry. The FEMA designated disaster counties have been reviewed by RD Program Directors. They have provided the following information:

### ***Rural Housing:***

- Multi-Family Housing: 156 Rural Development (RD) multi-family housing units sustained damages due to flooding and/or tornadoes. As of November 2019, these units remain uninhabitable. All impacted tenants have received a Letter of Priority Entitlement (LOPE) that placed them at the top of the waiting list for federally subsidized complexes.
- Single Family Housing: Data collection is ongoing to determine the impact of flooding on RD single family homes.

### ***Community Programs:***

- Water and Environmental Programs (WEP): Rural Development (RD) has 277 WEP (Water and Wastewater Facilities) borrowers located within the disaster declared counties. Fourteen of these borrowers were impacted by the flooding and are currently being assessed.
- Community Facilities (CF): RD has 122 CF borrowers located within the disaster declared counties. Data collection is ongoing to determine the impact of flooding on these facilities.

### ***Business Programs:***

- Data collection is ongoing in order to fully understand the flooding impact on RD Business Program borrowers.

To fully understand the flooding impact on all Rural Development programs within Missouri, the Agriculture RSF will continue to review and calculate the available information.

## ***Health and Well Being***

Farming is a dangerous profession. This is especially so in rural areas where the number of health care facilities are decreasing. According to data from the University of North Carolina's Cecil G. Sheps Center for Health Services Research, Missouri has had six rural hospitals close since 2014, with three of these closures occurring in 2018 and 2019. In order to obtain the care needed, rural Missourians are having to drive farther than ever before. Because 2019 was a stressful year for farmers, and what many will be facing in the upcoming winter and the spring this stress will continue to be a critical issue. The solution to this critical issue will require an inventive approach, as the cause in the decline of rural healthcare is multifaceted.

## **Known Issues**

### ***Full impact of flood cannot be fully assessed due to crops/land still under water:***

Approximately 30,000 acres remain underwater in the northwest portion of the state. This has hindered data collection and reporting, that would allow an overview of the extent of damages. Losses and damages are still being calculated, and the full impact will not be known until well into next year.

***Disruption of Crop production:*** Flooding to approximately 1.4 million acres (Farm Service Agency, 2019) of farmland resulted in fields being unplatable for both the spring and fall season. In the upper Northwest portion of the state, more than 74,000 acres alone were inundated by flood waters. Current levee conditions as well as approximately 30,000 acres still inundated with flood waters, makes the upcoming spring planting season unlikely as well.

***Health and Well Being:*** Previous and ongoing flooding can influence communities and farmers alike. It can exasperate a current health condition or create new health conditions. This is also true for conditions such as depression, anxiety, traumatic stress and substance abuse. Many producers located in the Northwest portion of the state are also looking at floodwaters freezing in place on fields that are still underwater. This can only exacerbate an already bleak outlook for these producers. Rural healthcare is declining, thus making timely visits to healthcare facilities difficult and timely.

***Data and reporting of impacts:*** Data collection and reporting is an important element in this mission scoping analysis. It allows for significant and impactful recovery. Quantitative data was at times difficult to obtain. This was due to late application deadlines, lengthy data request procedures, and additional research time required due to inaccurate information being received. Comprehensive documentation of the collection process before, during and after the event is essential to an impactful recovery.



## Recovery Needs

- Transportation (i.e. dependable roads), will be key to recovery so that commerce may return to its prior status.
- There may be a need for producers to assess their losses and determine what option(s) are best for them.
- Rural populations have limited provider choices, fewer clinics to choose from, and longer travel times to access mental health care providers.
- Changes that the Risk Management Agency (RMA) may adapt in order to offset high risk premiums, if levees cannot be repaired or be only partially repaired.
- More options for producers to enhance levees, for protection against future flooding.
- Better coordination between federal and state agencies upstream and downstream in the Missouri & Mississippi River systems.
- Target soil and water conservation practices in areas that would improve drought resiliency and decrease flood risk.
- The consideration of impacts to agricultural land being calculated into the overall assessment of damages to the state, across federal agencies.

## Recovery Strategies for Considerations

- Enhance water monitoring system to better model flood and drought conditions and economic impacts.
- Identifying USDA federal programs that can benefit disaster affected residents, municipalities, farmers, and food systems.
- Producers should be aware, through USDA outreach activities, of all programs available from Farm Service Agency (FSA), Natural Resource Conservation Agency (NRCS), Risk Management Agency (RMA), Rural Development (RD).
- Examine current funding streams for water conservation practices
- Recommend changes to the PL 84-99 program to allow for longer-term view of cost, resulting in exploration of creative options for levee resilience and lowering the likelihood of complete levee failure and repeated repair costs.



PAGE INTENTIONALLY LEFT BLANK

## II. COMMUNITY PLANNING & CAPACITY BUILDING

### CPCB State – Federal RSF Team Mission Statement

The mission of the Community Planning and Capacity Building (CPCB) Recovery Support Function (RSF) is to enable local governments to more effectively and efficiently carry out community-based recovery planning, management, and implementation in a post-disaster environment. The CPCB RSF coordinates support among a variety of partners for the planning, capacity, and resilience building capabilities needed by local governments following large or unique disasters. Coordination and partner support are tailored to the needs of the State of Missouri and the disaster-impacted communities within the State, through an information sharing, assessment, and strategy development process. CPCB also supports state governments in developing programs of support for local recovery planning and management.

<b>Community Planning and Capacity Building Partners</b>
<b>Coordinating Agency</b>
Federal Emergency Management Agency (FEMA)
<b>Primary Agencies</b>
Federal Emergency Management Agency (FEMA)
U.S. Dept. of Housing and Urban Development (HUD)
<b>Supporting Agencies</b>
U.S. Department of Health and Human Services (HHS)
U.S. Dept. of Commerce (DOC)
U.S. Environmental Protection Agency (EPA)
U.S. Department of the Interior (DOI)
U.S. Department of Agriculture (USDA)
U.S. Small Business Administration (SBA)
U.S. Dept. of Education (ED)
U.S. Dept. of Justice (DOJ)
U.S. Army Corps of Engineers (USACE)
U.S. Dept. of Transportation (DOT)
U.S. Access Board
Delta Regional Authority (DRA)
General Services Administration (GSA)
Corp. for National and Community Service (CNCS)
American Red Cross (ARC)
National Voluntary Organizations Active in Disaster (NVOAD)

## Core Actions

CPCB staff was deployed to Missouri in mid-September of 2019 and began assessing the impacts of the spring and summer flooding. In addition to the assessment of impacts, CPCB staff considered pre-disaster planning and management capability and capacity challenges. They also reviewed FEMA public assistance and individual assistance damage assessments to specifically identify which communities have the greatest needs and what those needs are to further scope and refine CPCB's disaster recovery mission in Missouri. CPCB staff took on this mission scoping process in coordination and collaboration with the newly formed state Community RSF, which is led by Missouri's Department of Economic Development and serves as the state counterpart to the federal CPCB RSF under the Missouri Disaster Recovery Framework (MDRF). The mission scoping process for CPCB centered around the development of a Community Conditions Assessment (CCA), a standard yet adaptable process CPCB uses to identify specific communities with the greatest recovery needs and assistance opportunities. CPCB then uses the information gathered through this process to clarify its mission and identify potential issues to address in the Recovery Support Strategy (RSS).

The CPCB RSF's CCA process compares baseline conditions and disaster impact data relevant to perceived capacity to recover, based primarily on publicly available information at a set point in time, to determine a set of focus communities with the greatest disaster impact and the least capacity to manage and plan for recovery. For DR-4435-MO and DR-4451-MO, the CCA process included development and analysis of a CCA Data Analysis Table. The data analysis scored 67 of the most impacted communities based on 32 variables indicating disaster impact, recovery planning and management capacity, and social vulnerability (considered an aspect of recovery capacity), deriving a combined capacity and impact score for each. The 86 declared counties (across both disaster declarations) and the independent City of St. Louis underwent a similar comparative scoring analysis, utilizing 34 variables. The final scores for all 67 analyzed communities and the Top 30 counties were categorized according to comparative level of impact (lower, moderate, higher) and comparative resilient recovery capacity (higher, moderate, lower) and plotted on an Impact vs. Capacity Matrix, with Impact plotted on the X-axis of the chart and Capacity plotted on the Y-axis of the chart.

## Impact vs. Capacity Matrix for Top 30 Impacted Counties

	Lower Impact	Moderate Impact	Higher Impact	
Lower Capacity	Forsyth Jasper Blodgett Rock Port East Prairie Elsberry Barnhart Trimble	Lewis and Clark Village Caruthersville Chamois Glasgow Kimmswick Eldon Old Monroe Hornersville New Madrid Osceola Waverly Anderson	Craig Foley Levasy Annada Brunswick Portage Des Sioux Rosendale Winfield Watson West Alton Clarksville Big Lake	Lower Capacity
Moderate Capacity	Clinton Fayette Miami Hermann Windsor Place Waynesville Chillicothe Edgerton Webb City Raytown Boonville Cape Girardeau	Mound City La Grange Crystal City Lexington Herculaneum Moberly Lebanon Carrollton West Plains Hannibal Agency Jackson Neosho Savannah	Louisiana	Moderate Capacity
Higher Capacity	Carl Junction Parkville Arnold Smithville St. Charles O' Fallon	St. Joseph Jefferson City		Higher Capacity
	Lower Impact	Moderate Impact	Higher Impact	

## Impact vs. Capacity Matrix for Impacted Communities

	Low Impact	Moderate Impact	High Impact	
Low Capacity	Mississippi Dade Gasconade Gentry Daviess Benton	Ste. Genevieve Clark Saline Howard Lewis Pulaski Grundy	Holt Atchison Chariton Pike	Low Capacity
Moderate Capacity		Newton Perry Callaway Ray Jackson	Andrew Carroll Lincoln Miller Livingston Buchanan	Moderate Capacity
High Capacity			Cole St. Charles	High Capacity
	Low Impact	Moderate Impact	High Impact	

The second component of the CCA is the ongoing process of working with the state's Community RSF to seek input on priorities and concerns in specific communities from partners such as the Missouri Department of Economic Development (DED), the Missouri Housing Development Commission (MHDC), the Missouri Department of Transportation (MODOT), and the Missouri Department of Mental Health (DMH), among others. As well, regional and local partners, such as Regional Planning Commissions and Councils of Government, Missouri Extension, Missouri Community Betterment, the Missouri Municipal League, and Long-Term Recovery Committees, among others were consulted. Information gathered from these partners will also be incorporated into future potential updates of the CCA data table and the overall analysis. This information will be considered in determining which types of assistance CPCB will recommend in the Recovery Support Strategy (RSS) and to which communities that assistance may be offered. A Whole Community Partners meeting, held on November 25, 2019, served as a culminating experience of the mission scoping process; the meeting engaged partners from across the state in a full day of presentations and discussion sessions and provided much of the verification and corroboration for the CPCB and State Community RSF Team's (CPCB team) initial findings.

## Analysis and Impacts

Through the data collection process described in the previous section, as well as conversations with state government and non-governmental partners, analysis of media reports, and information gleaned from other reliable information sources, the CPCB team identified and ranked 10 counties with comparatively high impact and comparatively low to moderate capacity for disaster recovery planning and management. These top 10 counties will likely present the most opportunities for success in offering CPCB-related technical planning and/or capacity building assistance.

### **The top 10 counties for targeted CPCB assistance in Missouri are:**

1. Holt	2. Atchison	3. Chariton	4. Andrew	5. Carroll
6. Pike	7. Lincoln	8. Miller	9. Livingston	10. Buchanan

Through similar analysis of the most impacted communities, CPCB staff also identified 25 communities of notable concern that may present opportunities for enhanced engagement. Of those, 15 communities were found to have significantly higher disaster impacts and lower



recovery planning and management capacity out of the 67 communities included in the CCA Data Table.

**The top 15 communities for targeted CPCB assistance in Missouri are:**

<b>1. Craig</b> (Holt County)	<b>2. Foley</b> (Lincoln County)	<b>3. Portage Des Sioux</b> (St. Charles County)
<b>4. Levasy</b> (Jackson County)	<b>5. Annada</b> (Pike County)	<b>6. Brunswick</b> (Chariton County)
<b>7. Rosendale</b> (Andrew County)	<b>8. Winfield</b> (Lincoln County)	<b>9. Watson</b> (Atchison County)
<b>10. West Alton</b> (St. Charles County)	<b>11. Clarksville</b> (Pike County)	<b>12. Big Lake</b> (Holt County)
<b>13. Louisiana</b> (Pike County)	<b>14. Caruthersville</b> (Pemiscot County)	<b>15. Chamois</b> (Osage County)

The Top 15 communities all rated either below or just slightly above a total score of 50 for combined impact and capacity measures on a scale of 100, indicating significant needs that may present opportunities to coordinate or offer additional technical assistance. Lower scores indicated higher impacts and lower capacity to recover. The other 52 of the 67 most impacted communities rated between 53.7 and 97.2 out of 100. The lowest community score was for the community of Craig, at 16.5 out of 100. Holt County's score (county score of 22.9, also the lowest ranking county) was significantly lower than the next lowest score of 37.9 for the community of Foley, in Lincoln County (county score of 52.7, ranked 7<sup>th</sup>).

## Known Issues and Recovery Needs

CPCB, in coordination with its partners (both federal and non-governmental partners) and the State of Missouri's Community RSF, identified and refined the related recovery issues, planning challenges, and opportunities for the affected communities. While each community impacted by disaster faces some unique challenges, and these are continuing to be identified, the recovery issues, challenges, and opportunities common to most are discussed below.

## Limited Regional and Local Recovery Management Capability, Capacity, and Resources

### ***Limited recovery management capabilities and overwhelmed staff.***

Widespread and catastrophic disasters increase the workload demands on both State and local staff, as well as the added complexities of the recovery decisions they will have to make. Disaster recovery is challenging and complex. As such, it requires a broader range of skills and capabilities than is required by day-to-day governing. Managing recovery processes entails a greater understanding of many interdependent issues, ability to handle an increased workload, technical expertise in various sectors, and the ability to track and manage the various deadlines, compliance requirements, etc.

Missouri communities of all sizes may be overwhelmed with the disaster recovery process. For example, Haley Campbell, Mitigation and Recovery Specialist for Boone County, a county with a higher CCA rating for Capacity (84/100) [73.3/100 when weighted for impact (42<sup>nd</sup> out of 86 counties and one independent city)], confirmed at the Whole Community Partners meeting that the Boone County Office of Emergency Management's capacity to write and manage grants, has been pointedly strained due to the disaster. In discussions with CPCB staff, Ramona Huckstep of Missouri Municipal League (MML) also confirmed that staff in MML member communities throughout the disaster-impacted areas have concurrently reported being overwhelmed by additional duties they have taken on as a result of the disaster.

Additionally, an estimated 40% of disaster impacted counties have fewer than 10 permanent full-time equivalent (FTE) professional or paraprofessional staff, and approximately 42% of impacted communities have fewer than 5. Many counties and communities in Missouri operate nearly entirely based on utilizing voluntary or part-time efforts of non-professional community members to handle administrative roles. Strict term limits on elected positions, and the often voluntary and non-compensated nature of elected and non-elected governing positions alike, also frequently lead to high turnover for local government officials in Missouri. All, of which, contribute to low ongoing institutional knowledge in many county and community governments.

***Capacity challenges exacerbated by displacement due to disaster impacts.*** The widespread and primarily rural nature of the impacted areas poses unique and significant challenges to recovery for smaller and more rural communities. Approximately 30% of Missouri's incorporated municipalities are classified by the state as villages, meaning they typically have fewer than 500 residents. Approximately 88% of Missouri's incorporated municipalities are classified as either villages or 4<sup>th</sup> Class cities, meaning they generally consist of fewer than 3,000 residents. Per 2017 American Community Survey estimates, the median population of the 67 most impacted communities analyzed in the CCA is 2,538 persons. These smaller, more rural communities already typically have fewer resources (such as funds, staff availability, technical expertise, experience finding, applying for, and managing substantial grant funds, and access to

philanthropic and other resources) than larger communities during baseline conditions. The onset of a disaster exposes the extent of the limited capabilities and capacities of these communities to organize and effectively manage the recovery process. This is true of counties, municipalities, and unincorporated communities alike, often even in communities that have moderate to higher capacity to manage typical governing requirements during baseline conditions.

Approximately 75% of analyzed impacted communities experienced either stagnant population change, or significant population decline between 2009 and 2017, according to CCA calculations utilizing American Community Survey data. Several participants at the Whole Community Partners meeting for mission scoping referenced the additional strain that loss of population due to displacement has imposed on many of these communities that were already struggling to cope with the loss of capacity and resources that comes with a loss of population. Most notable of the anecdotes that CPCB has collected regarding this concern is that of the story of Cooper Nuclear Station, situated in Nebraska, just across the Missouri River from Atchison County in northwestern Missouri. The nuclear station is a major employer for residents of Atchison and Holt counties, the two most impacted and lowest capacity counties in the state of Missouri.

With the bridge and highway crossing to Nebraska closed for an extensive period due to the flooding, Missouri residents of those counties employed at the station were forced to either spend many additional hours and dollars in gas to either commute via a multi-hour detour each way or spend additional dollars to stay in hotels or camp in Nebraska. Frustrated by this situation, many have chosen to leave Missouri for Nebraska, to be on the same side of the river as their employer the next time flooding occurs. While a permanent move across the river may be in the best personal interest of those families that make that choice, it can be devastating to small communities such as Watson, Rock Port, or Mound City that need the tax dollars and potential community involvement and voluntary efforts of those residents to be able to survive and thrive.

The erosion of the tax base and public utility customer base in any of the impacted communities that can be caused by disaster displacement has the potential to significantly impact school budgets and utility operation revenues. These government services cannot operate solely based on volunteer hours and donated resources. Even the services that can operate that way may face a loss of volunteer hours and available resources. Circumstances may either force community members to leave the community entirely or cut back their time for assisting in recovery efforts due to longer and costlier commutes, or exorbitant housing costs associated with having to pay for temporary housing while also maintaining mortgage payments on a damaged home. All the factors mentioned add up quickly and can majorly impact a community's capacity to organize, plan, coordinate, and implement strategies and projects to support their collective recovery.

***Limited Availability of and Access to Resources.*** Ongoing CPCB staff analysis of county financial data from the Missouri State Auditor indicates that the amount of damage from the disaster likely far exceeds the available cash flow and/or cash reserves of many counties and

communities in the impacted area, requiring the need to potentially borrow or issue bonds or acquire grants to complete recovery projects in a timely manner and meet potential cost-share requirements (especially for FEMA Public Assistance projects). Group discussion at the Whole Community Partners meeting on November 25<sup>th</sup> identified that distribution of announcements regarding opportunities to meet with federal agencies are not always coordinated, thus, some community agencies/personnel haven't yet had the option to meet with the Federal agencies that may assist with recovery. Expedited information on how to apply for grants, public assistance, etc. for implementation of recovery projects would prove very beneficial to such agencies and personnel. This could also be an indication of the robust self-reliance mentality prevalent in Missouri and throughout the Midwest, which has likely influenced the low numbers of registrations for assistance, despite great need.

Even with an influx of philanthropic funding and other available resources, access to resources can be quite competitive, especially in an environment where there are multiple disasters within the region. Smaller, more rural communities in the impacted area face hurdles in securing a portion of these resources. With a smaller tax base, they have fewer resources available to them and generally do not have the same access to a range of resources, technical expertise, or organizational support as do larger communities.

***Mental Health and Well-Being Affects Capacity.*** A 2018 study by the University of Southern California, Schaeffer Center for Health Policy & Economics found that, in 2015, 10.4% of adults in Missouri (487,875) had experienced serious psychological distress in the prior 12 months, and an estimated 6% of all Missourian adults (281,466) had been diagnosed with a major depressive disorder (Heun-Johnson, Menchine, Goldman, and Seabury, 2018). Based on experience in prior disasters and discussions with Beckie Gierer of the Missouri Department of Mental Health's Office of Disaster Services, CPCB staff expects that the recent disaster will exacerbate this issue, likely resulting in increased cases of depression, anxiety, traumatic stress, and substance abuse among those impacted. Mental health and well-being issues impact a community's capacity to plan for and manage recovery. This is even more of an issue in smaller, more rural communities where the roles and responsibilities of governing are often voluntary, taken on by active community members in addition to other business and personal duties. The additional burden of dealing with a disaster, above and beyond their previous stressors, decreases their capacity to address the tasks involved with managing and planning for recovery.

## **Resilient Recovery Planning Challenges**

***Limited Planning/Community Development Staff.*** Many impacted communities, especially the smaller, more rural communities, have limited-to-no staff dedicated to planning/community development activities/efforts, and therefore may not have the capability and/or capacity to have done long-term planning in a pre-disaster/steady-state setting. In some cases, these smaller, more rural communities may rely on their respective counties or contractors for planning/community

development assistance. In the case of hazard mitigation plans, almost all of Missouri's communities are part of multi-county/multi-jurisdictional, regional hazard mitigation plans that are developed/coordinated by the Regional Planning Commissions (RPCs). As such, these communities may not have the capability, capacity, and/or appetite to take on the needs and tasks related to post-disaster redevelopment; additionally, their respective counties and RPCs will themselves likely be overwhelmed with post-disaster recovery concerns.



*Figure 3: Rock Port, MO-  
Road washed out due to  
flooding, July 2019*

***Limited Recovery Planning Experience.*** As identified above, the smaller, more rural communities have limited-to-no planning or community development staff, and thus may have little experience developing any kind of comprehensive, long-term plans, let alone recovery or resilience plans. The task of undertaking an inclusive and holistic long-term recovery planning process (that incorporates risk assessment, mitigation, and resilience concepts) may present challenges to communities, especially those with little capability, capacity, and experience.

The state of Missouri operates as a Home-Rule state, and therefore has not implemented any state-wide building or zoning code requirements. Approximately 57% of impacted communities analyzed in the CCA process have no known active codes or planning documents. CPCB and Community RSF partners from across the state have noted that many communities are composed of individuals adverse to much government interference in their lives, and view the term “planning” in a negative light, believing it will lead to undue restrictions on their personal freedom to use their land and build their homes and other structures as they so desire. In many counties and communities, the use of codes and ordinances to control development is restricted solely to nuisance abatement. Overcoming these views of planning will present a significant challenge to encouraging communities to think strategically and work collaboratively to organize and implement strategies and projects aimed at assisting them in disaster recovery.

Communities can also be overwhelmed by the requirements of a multi-sector recovery planning process that engages the whole community; includes subject matter and technical expertise across a broad range of topics; convenes diverse groups of people with competing interests, facilitates the development of the community's vision, while identifying and prioritizing specific projects. Anecdotal information shared by RSF partners has also indicated that a common occurrence in many of the impacted communities is that decisions affecting the whole community are often made by a few vocal influencers, whose views do not necessarily account for the ideas, opinions, and needs of all members of the community, potentially leaving vulnerable populations such as undocumented persons or persons with access and functional needs without a voice in the process. Implementation of a recovery plan may also prove even more challenging, as it will require experience managing multiple or phased projects, aligning projects with potential funding resources (e.g., grants writing and management)' and maintaining continued/consistent engagement with multiple and diverse stakeholders.

The more times a recovery project is included in a plan, the likelihood of the project being funded and supported by the community increases as well. Also, funding entities are more likely to support projects that are derived from community-based or strategic planning efforts, are regional in nature, or can serve as a model for other communities.

*Figure 4: Flood damage in Lincoln County, MO, July 2019*



***Limited Understanding of the Interdependencies between Sectors (Need for Enhanced Cross-Sector Coordination).*** CPCB and Community RSF partners have noted that many communities have a limited understanding of the complexity and interdependency between levee systems, farmland, and ecology, and its impacts on the various sectors that drive the community. Recovery is challenging because it requires establishing or re-establishing important

relationships within the community (system) and between the community (system) and its environment. The complexity of the disaster impacts requires greater cross-sector coordination at all levels of government to get a better understanding of the integrated issues and to develop, fund, and implement recovery strategies to address them. This indicates a potential need for more inclusive and integrated planning, as described below.

***Inclusive Planning.*** An essential element of recovery planning success is a community's ability to conduct meaningful public engagement with multiple and diverse stakeholders, and the "whole community." Whole community includes individuals and families, including those with access and functional needs, businesses, faith-based and community organizations, non-profit groups, schools and academia, media outlets, and all levels of government, including state, local, tribal, territorial, and federal partners.

***Integrated Planning.*** Recovery planning strategies and activities should be integrated with other community plans/initiatives to minimize duplicative efforts, leverage resources, and increase opportunities for implementation. Community recovery plans should be linked to other relevant plans, such as hazard mitigation, comprehensive and capital improvement plans. Many local communities and their RPCs across Missouri are updating their local hazard mitigation plans to ensure they are eligible for Hazard Mitigation Grant Program funding. Additionally, if the State should choose to develop a long-term recovery plan over the upcoming year, communities should work with the State throughout this process to ensure their concerns are addressed in an overall Statewide Long-Term Recovery Plan. Any plans developed as a result of or in conjunction with the timing of the disaster will present an opportunity for the CPCB and Community RSFs to support enhanced integration of existing plans into the new plans.

***Limited Pre-Disaster Recovery and Resilience Planning.*** The nature and scale of this disaster has overwhelmed both the State of Missouri government and its local communities. The State's last major disaster was only two years ago in 2017, but the devastation and disaster impacts did not rise to the same level as this disaster. At that time, efforts began to develop a state recovery framework. The Missouri Disaster Recovery Framework (MDRF) has since been established in alignment with the National Disaster Recovery Framework (NDRF), but this disaster is the first time the Recovery Support Functions structure has stood up. Thus, the State and its local communities are very new to the complexity of planning and managing comprehensive, long-term disaster recovery and the requisite need to quickly make strategy and planning decisions that impact all constituents. Failure to make these strategy and planning decisions in a well-informed, yet timely manner could potentially lead to cascading impacts. Without implementing recovery efforts in a coordinated and orderly fashion prior to the next disaster (which could strike any time), the ongoing resiliency of Missouri's communities may begin to decrease, making recovery from future disasters even more difficult. With effective planning and efficient implementation, the opposite can be true, and Missouri's communities could increase their resilience over time, reducing future risks and reducing the physical, emotional, and monetary costs of future recovery.



CPCB and Community RSF mission scoping processes have noted limited pre-disaster groundwork for recovery and resiliency planning at all levels of government within Missouri. One of the greatest areas of concern identified by CPCB staff is the limited participation throughout Missouri in the National Flood Insurance Program (NFIP), and especially limited participation in the NFIP's Community Rating System (CRS), which offers communities the opportunity to reduce their residents' flood insurance premiums in return for completing various resiliency objectives. Seeking opportunities to educate communities on these programs and other ways to increase community resilience should be considered during the Recovery Support Strategy development phase.

Another concern for long-term and pre-disaster recovery planning, resilience, and mitigation planning identified by partners is the need for a multi-agency review process to coordinate disaster recovery funding strategies in Missouri, both ongoing and in direct response to the 2019 floods and tornados. To support this coordination, the State of Missouri might consider adopting a state-wide, standard community resiliency outcomes measurement and scoring system to benchmark resiliency efforts in communities across the state and to document and measure successes. Many resiliency measurement systems have been developed in recent years. A good example of a resiliency measurement system is one completed in 2015 by the Harry S. Truman School of Public Affairs at the University of Missouri in Columbia, MO.

## Recovery Opportunities and Recommendations

The recovery issues identified above present opportunities for both capacity building and recovery strategies and planning support in the impacted communities, especially in the smaller, more rural communities. As a primary coordinating entity, CPCB's most important role is that of coordination among its Federal and non-governmental partners, assisting with state partner coordination and partner identification and coordination at the local level as part of the recovery planning process.

### Capacity Building

CPCB can play its coordinating role by working with its partners from the federal interagency, non-governmental organizations, academia, and State of Missouri partners to develop and coordinate recovery-related capacity building efforts and initiatives. This can include symposia, workshops, peer-to-peer mentoring, webinars, training, and other events/resources that address a variety of topics of importance related to long-term recovery management and planning, such as:

- Funding opportunities
- Floodplain management

- Grant writing and management
- Communications, engagement, and public relations
- Volunteer recruitment, retention, and management
- Recovery planning principles and processes
- Fund accounting and financial management
- Lessons-learned and best practices from previously disaster-impacted communities
- Mitigation, sustainability, and resilience principles and practices
- Partnership building and maintenance
- Recovery Planning Support

Recovery strategies and planning support opportunities cover a broad range of activities, including:

- Risk information and decision-making guidance and tools
- Integration of plans
- Multi-sector, community-based processes to develop recovery or resilience plans
- Project identification and prioritization
- Communications and engagement strategies
- Stakeholder/partner identification and coordination
- Implementation, funding resource and strategies identification
- Development of disaster recovery or resilience frameworks
- Community visioning and basic strategy development.

For those communities or regional areas with more capacity (i.e., those with planning/community development and/or economic development staff, robust local non-profit communities, etc.), support from CPCB and its partners could take the form of trainings, the provision of guidance/best practices documents, and/or consultations on specific questions or steps of the recovery/resilience planning process. For example, CPCB has begun providing the Missouri Association of Councils of Governments (MACOG) with long-term recovery planning guidance, best practices, and examples, along with components of Missouri Extension and the Missouri Municipal League.

For those communities or regional areas with less capacity or with damage so severe or complex that the community's capacity is quickly overwhelmed, support from CPCB and its partners may involve the capacity building efforts identified above, but also include more hands-on assistance in the form of community planning technical assistance (CPTA). While ownership, development and implementation of the plan is still very much in local hands, CPCB and its partners can spend more time with these communities to guide the process in a more hands-on way.

These examples of CPCB assistance are only an illustration of what can be done, not what will be done, in any given community – any activities will be in response to the State’s, and in turn, a community’s requested level of assistance.

Based on the CPCB Team’s analysis and discussions with its partners, three major recovery needs have been identified:

- Recovery Management Capacity Building
- Resilient Recovery Planning Capacity Building
- Pre-Disaster Recovery and Resilience Planning Capacity Building

Additionally, through a 3-step and multifaceted analysis process, some communities will be identified as having high disaster impacts and currently low recovery management and planning capacity, yet also having significant potential for opportunities to implement community planning for disaster recovery and build capacity for future resilience through receiving targeted CPCB assistance. This will continue to evolve as communities and partners are engaged and opportunities for assistance and collaboration are identified.

The communities identified in the CCA are potential areas for targeted, hands-on community planning technical assistance, as well as any of CPCB’s other available forms of assistance. Moving forward, CPCB will work with the State of Missouri and its partners to develop recovery support strategies that address the major recovery needs both at a statewide level and for individual communities and regions throughout Missouri affected by the disaster. A regional or county level approach may be one tactic to maximize the impact of CPCB-related efforts and initiatives with its partners across communities.



PAGE INTENTIONALLY LEFT BLANK

### III. ECONOMIC

#### Economic State-Federal RSF Team Mission Statement

The U. S. Economic Development Administration (EDA), designated by the U.S. Department of Commerce, serves as the coordinating agency of the Economic Recovery Support Function (RSF) under the National Disaster Recovery Framework (NDRF). The mission of the Federal Economic RSF is to integrate the expertise of the federal government and develop economic opportunities to help local and state governments, Tribal Nations, and the private sector to sustain and rebuild businesses, employment, and resilient communities after a disaster.

The EDA is collaborating with the federal interagency and state partners that comprise the State Economic RSF. Led by the Missouri Department of Economic Development (DED), the mission of the State Economic RSF is to return economic and business activities (including agriculture) to a state of health and develop new economic activities that result in sustainable and economically viable communities (DED, 2019).

Created in response to the 2019 disasters, this state-federal recovery support coordination team is working to assess economic impacts, determine unmet needs, and identify potential recovery assistance. This collaborative effort is to support economic recovery and resiliency initiatives. The State-Federal Economic RSF includes the following partners:

<b>Federal Economic Partners</b>
<b>Coordinating Agency</b>
Economic Development Administration (EDA)
<b>Primary Agencies</b>
Federal Emergency Management Agency (FEMA)
U.S. Department of Agriculture (USDA)
U.S. Department of Commerce (DOC)
U.S. Department of Labor (DOL)
U.S. Small Business Administration (SBA)
U.S. Department of the Treasury (TREAS)
<b>Supporting Agencies</b>
Corporation for National and Community Services (CNCS)
U.S. Department of Health and Human Services (HHS)
U.S. Department of the Interior (DOI)
U.S. Environmental Protection Agency (EPA)
U.S. Department of Housing and Urban Development (HUD)
<b>State Economic Partners</b>
<b>Coordinating Agency</b>

Missouri Department of Economic Development
<b>Strategic Members</b>
Missouri Department of Agriculture
Missouri Department of Insurance, Financial Institutions and Professional Registration
Missouri Department of Labor and Industrial Relations
Missouri Office of Administration
Missouri Association of Councils of Government
Missouri Chamber of Commerce
University of Missouri
Missouri Economic Development Council
<b>Support Critical Members</b>
Missouri Department of Conservation
Missouri Department of Natural Resources
Missouri State Parks Division
Missouri Agriculture and Small Business Development Authority
Missouri Public Transit Association
Missouri Small Business and Technology Development Centers
Missouri Office of the Attorney General
Missouri Consumer Protection Division
Missouri Department of Health Senior Services
Missouri Department of Mental Health
Missouri Department of Public Safety
State Emergency Management Agency
Missouri Veterans Commission
Missouri Department of Social Services
Missouri Department of Transportation (MODOT)
Missouri Economic Development Finance Association
Missouri Development Finance Board
Missouri Technology Corporation
Missouri Main Street Connection
Missouri Municipal League
Missouri Association of Counties
Missouri Association of Conventions and Visitors Bureaus
Missouri Community Betterment

## Core Actions

Initial economic impact assessments have been made by the FEMA Advance Evaluation Team (AET), and state partners have reported impacts as information has become available. Certain economic impacts from the tornados, rainstorms, and flooding will not be fully realized for months or years to come. For example, ongoing flooding and standing water make it difficult to accurately assess economic losses. Additionally, disruptions to roads, railways and housing have

caused displacement of the workforce and interruptions to agribusiness-as-usual operations. These impacts have not yet been fully quantified due, in part, to challenges including the lack of established data collection methods and the low rate of applications for federal assistance.

Of Missouri's 114 counties, 87 were declared eligible for federal assistance under DR-4451. Sixty-one were declared eligible for public assistance (PA) alone, four were declared eligible for individual assistance (IA), and 22 counties were declared eligible for both PA and IA. FEMA's Community Planning and Capacity Building (CPCB) RSF is continually updating a Community Conditions Assessment (CCA), which ranks declared counties based on the comparison of pre-disaster conditions and disaster impact data relevant to the counties' perceived capacity to recover. The CCA identifies the following ten counties, all of which are riverine, primarily along the Missouri and Mississippi rivers, as the most impacted with the least ability to recover:

1. Holt	6. Pike
2. Atchison	7. Lincoln
3. Chariton	8. Miller
4. Andrew	9. Livingston
5. Carroll	10. Buchanan

While the State-Federal Economic RSF began its assessment with the CCA identified counties, it is focused on all impacted communities and the identification of statewide economic impacts and trends.

Missouri's top industries include agriculture and agribusiness, auto suppliers, bio-science, finance and banking, healthcare, and service industries (primarily tourism). Top employers include Walmart, the Missouri state government, and the University of Missouri (MERIC, 2018; Peters, 2017; University of Missouri, 2019).<sup>1</sup> The main sources of employment are retail, customer services, health services, food preparation, and wage labor. A majority of state employment (58%) is located in Kansas City and St. Louis (Bureau of Economic Analysis, 2019). Initial disaster assessments noted substantial impacts to agriculture and agribusiness, transportation, and tourism, as well as related impacts to rural businesses and the workforce.

Continued assessment of the economic conditions will support the ability of the state and local communities to define the challenges, identify resources to assist with addressing those

---

<sup>1</sup> Walmart is the largest employer in the state, at 41,000 people. Missouri's state government and the university system are the top public sector employers at 38,000 and 21,000 employees, respectively.



challenges, and to prioritize actions that should be taken to restore local businesses and integrate economic resiliency measures into local economies.

## Analysis and Impacts

At this time, the State-Federal Economic RSF is focused on assessing impacts in the following sectors:

- Agriculture and Agribusiness
- Transportation
- Tourism
- Industry and Small Business.

Workforce was also considered as a primary area of focus; however, available unemployment/labor employment data does not show significant impact. Still, workforce is important to post-disaster economic challenges in the state and is discussed as a cross-cutting issue in this report. The State-Federal Economic RSF will continue to identify impacts and recovery related issues within these sectors and may include other sectors if necessary.

### *Agriculture and Agribusiness*

Agriculture is one of the top five industries in Missouri, accounting for \$88.4 billion in State domestic product. The state's agricultural sectors—crops and crop production, forestry, animal husbandry and livestock—provide 378,232 jobs, \$17.5 billion in labor income, \$2.2 billion in state and/or local taxes, and \$4 billion in federal taxes. Missouri is ranked second in the U.S. for number of farms, a majority of which (89%) are family or individually owned<sup>2</sup> (BEA, 2019). While an estimated 85% of state farm revenue comes from larger family farms,<sup>3</sup> many of the farms are relatively small,<sup>4</sup> requiring their owners to supplement income with wage labor and small businesses, and most farmers carry little or no debt and resist the idea of loans unless absolutely necessary (Food and Agricultural Policy Research Institute, 2019). Agriculture is the primary industry in several Missouri counties, including those identified by CPCB as highly impacted with the lowest capacity to recover.

The historic flooding of 2019 resulted in record breaking impacts to farmers across the United States. Nearly 20 million acres nationwide, primarily in the Midwest, went unplanted (more than double the previous record set in 2010), as flood waters prevented farmers from planting

---

<sup>2</sup> Percentage calculated from 88,718 out of a total of 99,171 farms.

<sup>3</sup> Larger family farms account for 15% of farms in Missouri.

<sup>4</sup> 285 acres on average

insurable crops (American Farm Bureau, 2019). In Missouri, 1.58 million acres of farmland were either unplantable or unable to be harvested during the Spring and Fall 2019 planting seasons, resulting in an estimated \$512 million in production losses.<sup>5 6</sup> In Holt and Atchison Counties, a combined 103,003 acres of corn have gone unplanted (American Farm Bureau, 2019). In Carroll County, 70,000 acres of crops have gone unplanted (35,000 in corn and 35,000 in soybeans). This acreage, approximately 110 square miles, accounts for nearly 16% of all land in Carroll County; and crop losses equate to the hauling capacity of a train 30 miles in length. It is currently anticipated that 4,000 to 5,000 acres will not be used again; and an additional 1,000 acres, in areas where levees breached along the Missouri River, will need to be reworked to remove sand and silt to be useable (Carroll County Board of Commissioners, personal communication, Nov 27, 2019).

Putting the lost acreage into perspective, the Farm Service Agency (FSA) (2019) has reported that as many as 5,917 family farms lost 100% of their acreage to flood waters. In the top five CCA identified counties alone, 852 farms lost all production. The number of partially affected farms is far greater but remains undetermined. In these same five counties, the total lost acreage (prevent planting and lost crops) was 292,000. To note also is that farms will have considerable (unanticipated) expenses for cropland rehabilitation in ridding sand, silt, debris, and flood-related land damage. Another proxy for impact on individual farms is their year over year crop insurance payments. USDA figures indicate total farm payments of \$90.5 million for 2019 due to flooding alone. Flood related indemnity payments were far less in 2018 at \$6.4 million, and in 2017 at \$16 million. Ten percent (9.4 million) of the 2019 flood payments were made to Holt County, the top affected country according to FEMA's analysis. Flood related payments to the county in 2018 were only \$840,000 and considerably less in the years prior (\$50,000 in 2016 and \$1,000 in 2017) (USDA, 2019).

In addition to preventing planting, flood and rain damage left crop fields either too muddy to harvest or forced farmers to harvest immature crops in an effort to access them before waters freeze this winter. For example, in Holt County 32% of flooded acres remain underwater and will freeze in place over the winter resulting in spring flooding issues and crop impacts.<sup>7</sup> This continued flooding has also prevented crop insurance agents from accessing fields to evaluate

---

<sup>5</sup> Production losses calculated from average farm size and small farm production income reported by the State Department of Agriculture.

<sup>6</sup> MFA Incorporated, a mid-west based 45,000 member-owned farming cooperative serving Missouri and adjacent states reported a \$9 million loss as of August 31, 2019, due to disaster affected company facilities, operations and services.

<sup>7</sup> 30,000 of 95,000 flooded acres

crop damages (Summers, 2019). It is important to put the overall statewide disaster impact on agriculture into perspective.

According to the Food and Agricultural Policy Research Institute (FAPRI) of the University of Missouri (2019), the 2019 impacts were highly localized while the overall Missouri net farm income was on par or higher than past years.<sup>8</sup> Though statewide data for the agriculture industry

might indicate minimal impact, there are nevertheless large areas of localized devastation. As previously stated, counties like Holt, Atchison, and Carroll experienced devastating impacts.

The State-Federal Economic RSF continues to collaborate with the Agriculture RSF and state partners to assess impacts to agriculture and agribusiness and identify opportunities to support the sustained recovery of agricultural land, farmers, businesses, and communities.

### ***Transportation***

Infrastructure systems, such as roadways, bridges, and railroad lines, along with dams and levees that were breached and overtopped due to the flooding, have impacted communities, businesses and farms in many parts of the state. Impacts to transportation affect all aspects of the economy, from business revenue to supply chain and production. They also impact the workforce by disrupting commutes and displacing employees, resulting in population loss and reductions in tax revenue.



*Figure 5:  
Floodwater  
surrounds a farm  
near Craig, MO,  
Flooding 2019.*

---

<sup>8</sup> While farm cash receipts are estimated to have declined more than half billion dollars during the 2019 season, with no significant improvement predicted in 2020, FAPRI projections “show an increase in net farm income in 2019. The most important reason is a sharp increase in government support.” This is supplemented additionally by increased yield and higher farmgate prices for those farms that did produce. FAPRI estimates “that government payments will account for approximately half of Missouri’s \$1.9 billion of net farm income in 2019, the greatest proportion since 2002.”

According to the Missouri Department of Transportation (MODOT), the 2019 floods caused the closure of 470 highways for varying lengths of time up to at least six months, resulting in significant economic impacts. For example, the closure of I-29 alone, from March 15 to May 8, and from May 29 to June 19, was devastating to the communities of the Northwest corner of the state. Atchison and Holt counties rely heavily on small businesses along the I-29 corridor for sales tax revenue and employment. Twenty-four businesses in Atchison County alone were directly affected. MODOT (2019) calculates that the economic impact of this one key artery was \$103.8 million.<sup>9</sup> In Lafayette and Saline Counties, food processors, such as Monsanto and Conagra, and ethanol plants could not access farm produce from other counties because of road and railway closures. Farmers sent their produce elsewhere in the state, resulting in lost revenue to these counties (Pioneer Trails RPC, personal communication, Nov 22, 2019).

*Figure 6: Floodwater covers a road leading into Carroll County, Flooding 2019*



Highways 159 and 136 provide access to Nebraska and Kansas and are utilized by Missouri, Nebraska, and Kansas communities to travel to and from work. For Missouri residents employed in Nebraska and Kansas, commutes increased from 20 to 30 minutes to 2.5 to three hours during road closures, forcing some families to relocate across the river or separate to accommodate family members working in Missouri and across state lines. The relocation of even a small number of residents seriously affects the economies of sparsely populated counties (An Assessment of Federal Recovery Efforts from Recent Disasters, 2019). Population loss results in the loss of tax revenue and the erosion of a community's economic base and its ability to support remaining residents.

In Carroll County, Highway 65 closed numerous times due to recurrent flooding from March to mid-fall. A typical commute to communities across the Missouri river of 10 to 30 minutes grew

---

<sup>9</sup> Combined total of operating cost for travel on detour routes and time cost for travel on detour routes.

to 90 minutes. This significantly impacted businesses in the city of Carrollton, affecting both employee and customer traffic. To the north, in Livingston County, Highway 65 from the main city of Chillicothe south was closed for four months. Chillicothe was cut off in three directions (south, west and east) on Highways 65 and 36 for a week (Carroll County Chamber of Commerce, personal communication, Nov 26, 2019). The full economic impact of the flooding on transportation may not be known for some time, as flood waters still cover certain roadways.

The State-Federal Economic RSF is working closely with MODOT to further calculate economic losses from road closures using its detailed data to help inform recovery strategies. The State-Federal Economic RSF is seeking to analyze the number of vehicles carrying products and goods that were diverted as a result of closures; diversion of the labor force and increases in commute times; operating and time costs of travel on detour routes; and the economic impacts of closures on employers and employees.

### ***Tourism***

Tourism is a major industry in Missouri. In 2018, an estimated 42 million people visited Missouri, generating \$17.2 billion in revenue and \$1.43 billion in local and state taxes. Tourism industries provided 301,789 jobs (8% of all jobs in the state). Last year, a majority of visitors to Missouri traveled to the state to visit family and friends (35.6%) and shop (19.2%), while outdoor recreation accounted for 29.7% of tourism-related activities (Tourism Economics, 2019). A large portion of state tourism is from natural attractions, and Missouri's six national parks receive 3.6 million visitors annually, generating \$411 million. Its 80 state parks and sites receive over 18 million visits each year which generate an overall value of \$1.4 billion, including tax revenue, and provide 14,500 jobs (Tourism Economics, 2019). The importance of tourism to Missourians can be seen in the legislature's July decision to push back public-school start dates by four days, beginning next fall, which is intended to support the tourism industry by giving families an extra week of summer vacation (Stewart, 2019).

In the CCA identified top ten counties, tourism provides \$230.69 million in economic impact and 6,119 jobs. Atchison, Holt, and Andrew Counties, which were directly impacted by the I-29 and Highways 159 and 136 closures, rely on the tourism industry for \$22.8 million annually and 389 jobs (Missouri Division of Tourism, 2019).

The tornados, storms, and flooding impacted the Missouri high season for tourism, June through August, as flooding occurred from April 29 to July 2019, and flood waters in some areas have not receded. Impacts to outdoor recreation were significant, with 18 state parks sustaining damage due to flooding and at least two marinas sustaining a total impact of \$1,753,575. (Missouri Department of Economic Development, 2019). One hundred miles of the Katy Trail, an important tourist destination, which normally generates \$18.5 million and supports 367 jobs,

were affected by flooding along the Missouri River. The well-known annual Katy Trail Ride, held every June, was canceled (Missouri State Parks, 2019) and 30 miles were still closed in October 2019. Many businesses along the trail reported a 50% drop in business during the high season. Once the flood waters have receded, damages to parks will take time to repair and trails may need to be rebuilt.

While the Missouri Division of Tourism (MDT) does not have a multifaceted process for tracking impacts to businesses in the tourism industry, it does track business sales and tax collections. For example, MDT (2019) noted a loss of \$30.2 million (2.5%) in revenue in August 2019 compared to August 2018. Equally, anecdotal information from businesses and statewide associations representing tourism can provide insight into disaster impacts.

According to the Missouri Association of RV Parks and Campgrounds (MOARC), which represents 70 privately owned parks and resorts in the state, one member went completely out of business and numerous members experienced a significant loss in revenue. Some members, whose parks were not affected by flooding, experienced an increase in occupancy, as visitors utilized their grounds due to closures at other parks. At this time, a majority of members are rebuilding in preparation for the 2020 season and would be interested in three-month loans to cover employee wages (MOARC, personal communication, Oct 31, 2019).

On May 22, 2019, a tornado struck many communities in the state, including the State Capital, Jefferson City. The Jefferson City Convention & Visitors Bureau (2019) reported a loss of over \$750,000 due to the destruction and temporary closing of the Missouri State Penitentiary (MSP), a major tourist attraction and event space. The MSP was permanently closed by the state in 2004 but has since been repurposed as both a museum and venue used for major concerts and other large events. This loss of income was due to both direct tourist revenue loss and the loss of economic attendee expenditures in the community.



*Figure 7: Tornado damage to the Missouri State Penitentiary, 2019*

Additionally, some business owners across the state have reported decreases in visitors due to assumptions that they or the surrounding attractions have been impacted and are closed or



inaccessible. It is suggested that Missouri would benefit from funding for large scale marketing after disasters to ensure that potential in and out-of-state visitors know that specific Missouri attractions are “open for business” (Missouri Travel Alliance, personal communication, Nov 7, 2019).

The State-Federal Economic RSF is working in partnership with the Natural and Cultural Resources (NCR) RSF to identify impacts to the tourism industry. Conversations with state partners, including the Department of Natural Resources (DNR) and MDT, are ongoing.

### ***Industry and Small Business***

While impacts to businesses may not be fully identified for some time, local preliminary assessments provide insight into areas of significant impact. Additionally, impacts to businesses can be deduced as a result of disruptions to transportation, reduced tourism, and impacts to agriculture.

According to combined preliminary damage assessments from FEMA, the Missouri State Emergency Management Agency (SEMA), the Small Business Administration (SBA), and local entities, 176 businesses were impacted in the top four ranked counties with the highest impact and lowest capacity to recover: Atchison (18), Chariton (26), Holt (38), and Pike (94) (FEMA, 2019). The Disaster Business Assessment conducted by DED (2019) reflects responses from only 18 businesses but is indicative of significant economic impact. For example, three businesses that responded with financial information (including the two marinas mentioned previously), reported a combined total of \$1,766,725 in losses.

To date, there have been 807 business-related insurance claims totaling \$103.8 million in losses (Missouri Department of Commerce & Insurance, 2019). These figures contrast with the 93 SBA

*Figure 8: Business in LaGrange comes to a standstill, due to 2019 Flooding.*



business loan applications received.<sup>10</sup> According to MSA research, this is a consequence of the unwillingness of many Missouri businesses to take on debt or the feeling that they do not meet the criteria for a loan.

Preliminary damage assessments, SBA loan data, and insurance claims do not reflect the full impact on Missouri businesses or the impact of those losses on communities. The impact on small businesses that has not been captured in these statistics is significant. It is difficult to calculate the aggregate lost business from closed roads, closed tourist attractions, and periodic closures from the loss of employees who left work to help with disaster prevention and response. One Regional Planning Commission Director described the effects on riverside businesses as “a fiasco” (Pioneer Trails RPC, personal communication, Nov 22, 2019).

For example, initial reports showed that Clarksville, one of dozens of affected towns, lost 20 businesses—nearly all businesses in the town. Initially, it was reported that they chose not to rebuild due to the likelihood of continued flood events and the town’s lack of flood protection (levee or flood wall). However, eight businesses in this town responded to the Missouri Disaster Business Assessment (2019), with only one stating that it would be closed permanently. The evolution of this information suggests the continual reassessment of needs by disaster survivors and may indicate the impact of federal assistance, as Clarksville received a \$700,000 federal grant to design a movable flood wall to protect itself from the Mississippi River (AP, 2019).

The May 22 EF-3 tornado damaged 500 commercial and residential buildings in Jefferson City (Cole County). According to the Jefferson City Building Regulations Division (2019), 200 construction permits for tornado related-damage have been issued, totaling at least \$6.2 million in project costs. Fifty-one of these permits were for commercial buildings, equaling \$4.1 million. Seven of these permits were issued for demolition. With a total of 500 buildings damaged, the number of permits for demolition or rebuilding will continue to grow (Hirsch, 2019).

Post-disaster impacted businesses may not have the ability to pay their 2019 property taxes. In Missouri, residential homes that were destroyed or sustained significant damage can file for a tax abatement (i.e. a reduction in property taxes). However, Missouri state law does not afford the owners of commercial properties the same opportunity, and property taxes must still be paid even for facilities that are completely destroyed. Businesses without loss-of-income insurance covering property taxes must seek legal assistance for relief (Sitter, 2019). In fact, 75% of businesses in the U.S. are underinsured by 40% or more and an estimated 40% of small business owners have no insurance at all. The primary reason cited for the lack insurance on the part of small businesses is the inability to afford it (DiNitto, 2019).

---

<sup>10</sup> As of December 2, SBA has approved 22 disaster loans for businesses, totaling \$2,339,700.



## Known Issues

Economic issues are not limited to agribusiness, tourism, transportation, and business. For example, impacts to housing, utilities, watersheds, schools, etc. affect businesses, the workforce, and the economies of impacted communities and of Missouri as a whole. The lack of reasonably priced housing, both exacerbated by and resultant from disaster damage, has contributed to the relocation of the workforce. Housing issues are particularly significant in the highly impacted areas which are also susceptible to repeated flood losses.

According to a recent article in the Jefferson City News Tribune (2019), the May 22 tornado exacerbated an already severe housing problem. More than 750 people are waitlisted for affordable housing, and many have been waiting for years. As a result of the tornado, the Housing Authority sustained major damage to a building containing five units that will take until 2020 to repair, and the city lost over two dozen housing units. Among the tornado-affected properties there are an estimated 152 units that could be demolished however, with 125 of those possibly being rebuilt, there is a net loss of 27 units. Those displaced by the tornado were put at the top of the Housing Authority's existing wait-list and placed as quickly as possible. However, the Housing Authority is still working to ensure that all who were impacted are aware that they too, are eligible to be placed on a wait-list (Cole, 2019).

Housing challenges are typical of larger urban communities but can be especially severe for rural communities and areas still impacted by flooding. While impacts across the state are still being identified, the relocation of families or family members due to lost homes and compromised transportation routes can result in significant financial burdens. Reasonably priced housing is already an issue in the State, and some families are newly paying rent while also paying off the mortgages on their flooded-out homes. Housing challenges disproportionately affect low income and underserved populations, as these groups usually reside in geographical areas that are prone to natural disasters and other negative elements. Still, housing issues are not limited to the low-income, as those working full-time at minimum wage also struggle to find housing.

Economic impacts on Missouri families and workforce were significant. While there was no notable change in unemployment figures for the disaster and post-disaster periods compared to previous months, in many parts of the state the workforce faced tremendous challenges reaching their jobs. As previously stated, road closures and detours significantly increased commute times (up to four hours each way in certain areas), resulting in many cases of individual or family relocation. In one reported case, a major employer, with over 1500 employees, arranged and paid for local hotel accommodations for a key portion of its workforce in order to maintain continuity of operations. It is important to note these challenges that are "invisible to the statistics," as in this case where workers remained employed and the business remained open. (Southeast RPC, personal communication, Dec 2, 2019).

## Recovery Needs

When assessing disaster impacts and identifying recovery opportunities, it is important to consider the culture of those affected. This is particularly true in Missouri, where the culture of “rugged individualism” is historically very strong. “The stalwart, conservative, non-credulous character of Missourians” has been echoed by many state associations and local stakeholders interviewed by the State-Federal Economic RSF (Ashcroft, 2019). For example, the leadership at the Missouri Trucking Association, the Missouri Association of Counties, and the Missouri Association of Secondary School Principals reported that their employees and constituents are used to solving disaster-related problems (i.e. taking longer routes to transport school students, hauling livestock or carrying supplies because of the closed roads and bridges) (Missouri Associations, personal communications, 2019). There are many who refuse to take on loans, file for unemployment and/or other assistance, or even report impacts. While the reluctance to take on loans post-disaster is not uncommon, it must be stated that these cultural influences are evident when conducting a diverse state-wide economic assessment.

The observed magnitude of the disaster is not directly reflected in the relatively low application numbers for federal assistance and other currently obtainable data. For example, sales tax revenue is often used as an indicator of post-disaster economic impact. However, changes in revenue must be analyzed over the long-term. In the months following a disaster, sales tax revenue tends to increase as residents and businesses are quick to replace high-cost equipment, appliances, etc. The Missouri Department of Revenue (DOR) reported increases in state-wide sales tax revenue in May and August and reductions in June and July 2019, as compared to the previous year. This correlates with the disaster events that occurred from March to April (DR-4435) and April to July (DR-4451). Revenue levels then stabilized in September. Studies have shown that short-term increases in tax revenue after disasters are often followed by long-term declines.

There are a number of reasons, posed by disaster professionals and those knowledgeable about Missouri behavior and perspectives, that may account for low applications numbers for federal assistance, including:

1. Lack of adequate dissemination of available public resources and programs
2. Suspicion or distaste for “government” programs
3. Perceived complexity of the application processes or lack of capacity
4. Reluctance (or inability) to take on additional debt through loan programs
5. Missouri culture of self-reliance, self-repair and resiliency, and DIY perspective.

These factors will be further explored as research continues in the assessment of impacts and the development of recovery strategies. To enhance stability, sustainability and resilience to future

hazards, the State-Federal Economic RSF has identified the following key economic recovery challenges:

### ***Agriculture and Agribusiness***

- Due to ongoing flooding, it has been difficult to accurately capture economic losses and long-term economic impacts on the agricultural sector.

### ***Transportation***

1. Flood disrupted transport systems result in cross-cutting impacts: service delivery and availability/access to goods and services, displacement of the workforce, loss of revenue to businesses.
2. Road closures, and related long-distance detours cause costly disruptions to commercial supply chains and greatly increased or obstructed commutes for workers.
3. Workforce displacement, employment disruption, and employee relocation due to significantly increased commute times.
4. Effectively repairing levees to mitigate flood risks is a problem for which there is not yet a clear solution.

### ***Tourism***

1. Because tourism sites across the state were impacted inconsistently, a state-wide trend in impact cannot be identified.
2. Due to the ongoing effects of past flooding, it has been difficult to accurately capture impacts to tourism.

### ***Industry and Small Business***

1. Missouri is heavily dependent on sales taxes to fund public entities, and certain counties rely on small businesses for this revenue. Losses in sales tax revenue, as the result of impacts to small businesses, will affect the ability of communities and counties to fund recovery efforts. Additionally, disaster-impacted businesses in Missouri are not eligible for tax abatements, while residential properties are. Businesses without loss-of-income insurance covering property taxes, must seek legal assistance for relief. These extra costs may inhibit their ability to recover.
2. Disruptions to the workforce, as a result of impacts to employers, can result in the relocation of employees to other communities or out of state. The relocation of even a small number of people in a sparsely populated county erodes the economic base of communities, creating a cycle of population and economic decline.

## Recovery Strategies / Considerations

The State-Federal Economic RSF has worked with other federal, state, and local partners to identify and assess the economic impacts of the 2019 tornados, storms, and flooding. It is clear that the state will experience significant flooding and other events in the future. Based on these findings, the RSF developed initial recommendations for recovery and future resilience.

Historically, Missouri's Councils of Governments and Regional Planning Commissions have provided critical technical assistance to counties, cities, villages and towns in the planning, grant writing, and implementation of initiatives. Because of this, in most cases, supporting these trusted brokers and force multipliers for local county/city/village clerks will be critical to any program's success. There are some counties and cities that do not participate in these regionalized technical assistance networks. Leveraging other area stakeholders, such as colleges, may be an avenue for building capacity in these areas.

### General Considerations

1. Build capacity at all levels of government to successfully implement recovery concepts.
2. Develop public and private sector plans and strategies that include roles and responsibilities to fully prepare communities to address economic recovery challenges.
3. Coordinate efforts among public, private and nonprofit/nongovernment partners to create a collaborative blueprint on successful implementation of recovery plans.
4. Encourage and support local ownership, leadership and management of the recovery process.
5. Create a process that works with each county and community to identify whether they have availed themselves of all federal assistance.
6. Encourage increased participation in the National Flood Insurance Program.
7. Develop policies, systems, structures, and tools for faster and more accurate post-disaster data collection and sharing.

### Key Issue Considerations

#### ***Agribusiness***

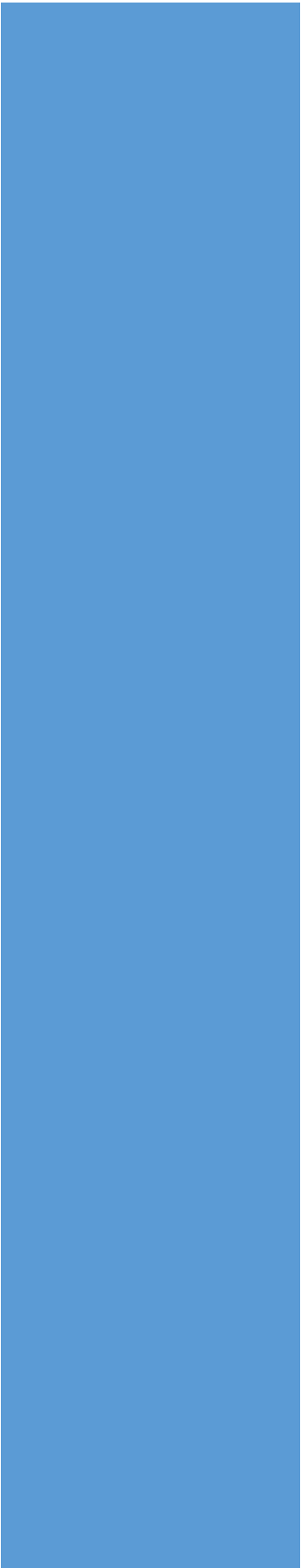
1. Identify and consider alternate uses for land such as planting hemp or switch grass, a leading biomass crop which can withstand flooding and prevent soil erosion.
2. Integrate hazard mitigation educational and technical assistance programs and processes through collaborative networks involving agribusiness public and private sectors.

### ***Transportation***

1. Identify solutions for hardening roadways and shoulders to help them withstand flooding impacts.

### ***Industry and Small Business***

1. Provide state/county and private sector support for business continuity and resiliency planning for the business community.



PAGE INTENTIONALLY LEFT BLANK

## IV. HOUSING

### Housing State – Federal RSF Team Mission Statement

The Department of Housing and Urban Development is the coordinating agency for the Housing Recovery Support Function (RSF). As outlined in the National Disaster Recovery Framework, the “Housing RSF coordinates and facilitates the delivery of Federal resources to implement housing solutions that effectively support the needs of the whole community and contribute to its sustainability and resilience. Housing is a critical and often challenging component of disaster recovery, but must be adequate, affordable, and accessible to make a difference for the whole community.”<sup>11</sup> Its primary objectives are to:

- Identify Strategies to Strengthen the Housing Market
- Meet the Need for Quality Affordable Rental Homes
- Utilize Housing as a Platform for Improving Quality of Life
- Build Inclusive and Sustainable Communities
- Integrate Disaster Mitigation Measures into Community Design and Development to Improve Disaster Resilience

The collaborative efforts of the State and Federal Housing RSFs contribute to the development of fully integrated considerations that identify solutions for pre- and post-disaster housing challenges and displaced households.

<b>Housing</b>
<b>Coordinating Agency</b>
U. S. Department of Housing and Urban Development (HUD)
<b>Primary Agencies</b>
U. S. Department of Agriculture (USDA)
U. S. Department of Justice (DOJ)
Federal Emergency Management Agency (FEMA)
U.S. Department of Housing and Urban Development (HUD)
<b>Supporting Agencies</b>
American Red Cross (ARC)
National Voluntary Organizations Active in Disaster (NVOAD)

---

<sup>11</sup> FEMA National Disaster Recovery Framework, Second Edition, June 2016



Corporation for National and Community Service (CNCS)
U. S. Department of Commerce (DOC)
U.S. Department of Energy (DOE)
U. S. Department of Health and Human Services (HHS)
U. S. Department of Veterans Affairs (VA)
Environmental Protection Agency (EPA)
General Services Administration (GSA)
Small Business Administration (SBA)
U. S. Access Board
<b>State and/or Local Agencies</b>
Missouri Housing Development Commission (MHDC)
Missouri State Treasurers Office
Missouri Department of Economic Development (DED)
Missouri Department of Health and Senior Services (DHSS)
The Missouri Chapter of the National Association of Housing & Redevelopment Officials (NAHRO)

## Core Actions

Working with the State Housing RSF Coordinator and other federal, state, and non-governmental partners, the Housing RSF has been focused on identifying the pre- and post-disaster housing concerns and recovery technical assistance needs of state and local governments within impacted communities. Collaboration between the Housing RSF and its State counterpart helps to ensure the identification of comprehensive integrated recovery solutions.

The Housing RSF has collected, analyzed, and synthesized information regarding damage assessments and housing impacts. As part of its data analysis, the Housing RSF has reviewed and analyzed data from the following sources:

- FEMA Individual Assistance Open Disaster Statistics as of November 5, 2019.
- FEMA Individual Assistance inspection and structure type data as of November 5, 2019.
- FEMA Individual Assistance inspection and registrant data as of November 5, 2019.
- Baseline Census data for the designated region, including 2017 American Community Survey (ACS) 5-Year Estimates and 2018 Vintage Population estimates.

- Bureau of Labor Statistics data for Individual Assistance declared counties; specifically, trends in skilled labor.

The Housing RSF has also engaged housing recovery stakeholders and reviewed other sources to obtain additional information that can aid in the long-term recovery planning process.

- Utilized the State Housing RSF contact list to survey, via email, their housing partners and obtain input on specific recovery issues. The list of respondents includes the following;
  - Cole County, MO
  - Northeast Community Action Corporation
  - Callaway County Volunteer Disaster Services
  - CES/Ag Business/Community Economic Development Mu Extension Univ. Of Missouri
  - Boonville Public Housing Authority
  - Ozarks Area Community Action Agency
  - Community Action Agency of St. Louis County
  - City of Jefferson, City Administrator
  - Mound City, MO
  - East Missouri Action Agency
  - City of Kirksville, MO
  - Atchison-Holt Disaster Recovery Committee
- Obtained stakeholder feedback from multiple state and local stakeholder organizations through participation in the State led November 25, 2019 Whole Community Partner Flood Recovery Mission Scoping meeting. During this activity, representatives of various state agencies, NGO's, Regional Planning Commissions, and the Missouri Realtors Association participated in facilitated group discussion on housing issues. Participants in the housing roundtable included the following organizations/agencies:
 

▪ Missouri Housing Development Commission	▪ Convoy of Hope
▪ Missouri Baptist Disaster Relief	▪ Catholic Charities
▪ Economic Development Administration	▪ Missouri State Treasurers Office
▪ Missouri Realtors Association	▪ Catholic Charities Mid-Missouri
▪ Catholic Charities of Southern Missouri	▪ American Red Cross
▪ Meramec Regional Planning Commission St. James, MO	▪ Mid-Missouri Regional Planning Commission
	▪ Missouri State Emergency Management Agency

- Northeast Community Action Corporation
  - Collected and reviewed media reports that provide information regarding housing damages and the impacts on individual households and communities.
  - In conjunction with the Economics RSF team, requested information from University of Missouri Extension officers in each county regarding housing issues experienced or observed at the local level. As responses are received, relevant information will be updated and included in the Housing Impact Assessment.
  - Continuing outreach efforts to housing partners and recovery stakeholders. As additional relevant information becomes available it will be incorporated into the Housing Impact Assessment.

In addition to and in support of the housing recovery planning process, the Housing RSF is also developing a Housing Impact Assessment. The purpose of the separate, but related, Assessment is to be a resource for state, local, and tribal officials as they consider their options for recovery. The document provides an overview of housing pre- and post-disaster in the impacted area, as well as preliminary findings and resources to aid long-term housing recovery. It contains up-to-date information on:

- Housing Damage Estimates from FEMA Individual Assistance inspections, including:
  - Extent and type of damage
  - Identifying counties with high levels of damage
  - Characteristics of households with damage
- Demographics and Housing Market Conditions of the counties with high levels of damage.
- Summaries of other relevant housing needs assessments, useful documents and reports, and conversations with local officials and experts.
- Examples of disaster recovery efforts that were pursued by other states and local governments facing similar disaster recovery needs.

The activities listed above outline the Core Actions the Housing RSF has been involved in to support the development of the Housing section of the Mission Scoping Assessment (MSA) and will be utilized in the development of the Recovery Support Strategy (RSS) and Housing Impact Assessment.

## Analysis and Impacts

As of September 30, 2019, a 26-county region was designated for FEMA Individual Assistance. Of the 26 declared counties, 16 were located within a Metropolitan Statistical Area (MSA), which are defined by the Office of Management Budget. Every MSA in the state of Missouri had at least one declared county except the Cape Girardeau MSA, which is located in the southeastern portion of the state.

The county populations range from very large (Jackson County) to very small (Holt County). Owner registrants comprise 75.2% of the FEMA registrants, with the remainder being renters. There were a small number of registrants (48) who did not indicate whether they were owners or renters.



*Figure 9: Damaged housing in Eldon, MO. Source: [Richard Cardona; FEMA, Aug 8, 2019; 9:58 a.m.]*

The pre-flood housing stock was most concentrated in counties located within a metropolitan area, with fewer housing units in surrounding rural counties. Low levels of pre-disaster stock in rural areas is particularly relevant to survivors displaced from rural counties needing to be rehoused within a reasonable commuting distance to maintain a connection to employment, health care, and school networks. This stands in contrast to survivors displaced from counties located within the metro areas who would be in closer proximity to a larger housing market and may have greater access to permanent rehousing options.

With only a few exceptions, homeownership rates pre-flooding were relatively strong throughout the impacted region. However, many of these owners were at risk of loss in the event of flooding, as many owners did not have flood insurance. Among owner registrants for FEMA assistance, approximately 70-percent had homeowners' insurance, but only 27% had flood insurance.

The housing stock in the declared counties generally mirrored the state in terms of severe rent burden. There were 6 counties where the severe rent burden for renters was above the Missouri

average of 46%. Boone and Greene counties had the highest rent burden at 53% and 50%, respectively. Conversely, Holt County was observed to have 28% of renters being rent-burdened, the lowest rate recorded amongst the individual assistance declared counties. It should be noted, however, that Holt County was the second most impacted county for owners and the third most impacted county for renters for damage based on the top three FEMA Verified Loss (FVL) categories. Low-income households may especially need support in accessing quality affordable permanent housing during the recovery process.



*Figure 10: Family surveys  
damages after flooding;  
Craig, MO, 2019*

## Known Issues

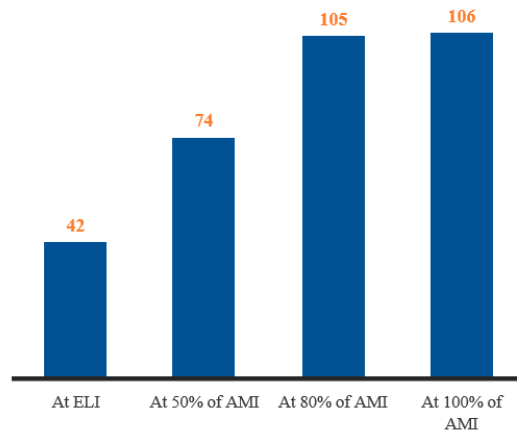
The Core Actions informed the Housing Recovery Support Function (RSF) of the disaster housing impacts, gaps, and needs across the state and resulted in it identifying four key areas for state and local agencies to consider in their long-term recovery planning. The Housing Impact Assessment will provide an analysis of the known issues in greater detail that compliments the information below. In addition, the issues are supported by other RSF's findings, as noted.

***Increased need for affordable, accessible housing:*** Prior to the disaster, many rural and densely populated areas of the State had a shortage of housing that could be rented, purchased, or leased by residents at given market price points.

The disaster has exacerbated this shortage. As stated in the Agriculture RSF section, fourteen USDA Rural Development housing complexes sustained damages due to flooding and/or tornadoes. Six of these complexes received substantial damage and are currently uninhabitable.

This issue is listed as a Known Issue by the Economic RSF. It states that housing issues are particularly significant in the highly impacted areas which are also susceptible to repeated flood losses and cites an article from the Jefferson City News Tribune (2019) pointing out that the May 22, 2019 tornado exacerbated an already severe housing problem in Jefferson City.

**AFFORDABLE AND AVAILABLE  
HOMES PER 100 RENTER  
HOUSEHOLDS**



Source: NLIHC tabulations of 2017 ACS PUMS

According to the National Low-Income Housing Coalition - 2019 Missouri Housing Profile, “Across Missouri, there is a shortage of rental homes affordable and available to extremely low-income households (ELI), whose incomes are at or below the poverty guideline or 30% of their area median income (AMI). Many of these households are severely cost burdened, spending more than half of their income on housing. Severely cost burdened poor households are more likely than other renters to sacrifice other necessities like healthy food and healthcare to pay the rent, and to experience unstable housing situations like evictions.” Some of the key facts include: 195,109 or 25% of renter households are ELI (maximum state income for a 4-person ELI family is \$24,600), there is a shortage of 113,015 rental homes affordable and available for ELI renters, and 69% of ELI renter households with severe cost burden<sup>12</sup>

***Increased need for sustainable/resilient housing:*** Disasters reduce already stressed housing stock, but also enhanced the need for more sustainable and resilient housing.

As stated by the Infrastructure RSF, a potential cause of development in vulnerable places may be that developers, landowners, and local governments may not have the best information on where to build and where it is advisable to build. There is a need for increased resilience and mitigating features of flood protections systems.

---

<sup>12</sup> National Low-Income Housing Coalition, Housing Needs by State <https://nlihc.org/housing-needs-by-state/missouri>

According to ACS data, 1,302,332 (54.9%) of all housing units in Missouri were built before 1980, leading to signs of aging and the need for substantial rehabilitation. Substandard housing is a concern for many households in the state: Census Data indicates there are 16,885 housing units in Missouri that meet the Census Bureau's definition of substandard housing. In addition, many other units have serious deficiencies in their electrical or plumbing systems, lack safe or adequate heating systems, or have other major structural deficiencies and are in need of substantial rehabilitation but do not meet the definition of substandard housing. Without specific mitigation programs and incentives or funds for resiliency measures (both damaged and unharmed) to the aging housing stock repairs become more expensive and may negatively impact an already shortage of affordable housing.<sup>13</sup>

***Increased mitigation efforts to prevent population loss:*** Population loss is a considerable concern after disasters due to impacts to transportation, housing loss, and population relocation.

The Community Planning and Capacity Building RSF stated that much depends on whether reasonably-priced and accessible housing is restored. The erosion of tax base and staff due to loss of property and possible loss of population may have cascading effects on local governments' ability to provide services and rebuild.

The Economic RSF found that disruption to roads, railways, and housing have caused displacement of the workforce and interruptions to agribusiness-as-usual operations. Transportation impacts the workforce by disrupting commutes and displacing employees, resulting in population lost and reductions in tax revenue.

***Expand regional capacity and funding for housing development:*** To improve upon the aforementioned challenges and issues, regional capacity and funding for housing development must be expanded.

As pointed out by the Community Planning and Capacity Building RSF, limited local recovery management capability and capacity is a known issue. Missouri communities of all sizes may be overwhelmed with the disaster recovery process and many counties and communities in Missouri operate almost entirely based on utilizing voluntary or part-time efforts of non-professional community members to handle administrative roles.

---

<sup>13</sup> State of Missouri 2019 Action Plan <https://dss.mo.gov/fsd/esg/pdf/action-plan-draft-2019.pdf>



## Recovery Needs

There is an essential need for cross-sector coordination of housing issues related to critical infrastructure and economic recovery, requiring enhanced efforts by the State and multi-agency programs and services. Coordination will also be needed to address the gaps of lower-income and rural communities where conditions were exacerbated by the disaster. Due to pre-existing shortages in affordable housing coupled with the damage impacts, the number and availability of accessible, affordable housing units have been significantly reduced.



*Figure 11: Destroyed housing in Jefferson City, MO. Source: [Richard Cardona; FEMA, August 9, 2019; 5:05 pm]*

The Housing Impact Assessment underway will provide an overview of housing, pre- and post-flooding in the impacted areas, as well as preliminary findings and resources to aid long-term housing recovery. Two recovery needs identified thus far include funding gaps and limited local government capacity.

## Recovery Strategies for Consideration

The Housing Impact Assessment underway will include key recovery considerations, recovery resource options, and affordable housing development tools. As noted above, the Assessment should be a resource document for state and local officials as they initiate their recovery planning and will contribute to the development of the Recovery Support Strategy (RSS) document. If appropriate, jurisdictions may find the document helpful for informing their required housing needs assessment in the immediate, and subsequently for future planning documents.

The Housing RSF has identified two resources available to support local recovery efforts, one for funding gaps and the other for capacity building:



1. To address funding gaps, representatives of the Federal Deposit Insurance Corporation have agreed to conduct a virtual roundtable for Missouri bankers. For this event, FDIC representatives will present background on the Community Reinvestment Act (CRA) and present types of community development assistance banks might consider assisting flooded communities and achieve CRA credits.
2. The U.S. Department of Housing and Urban Development has approved a program entitled Distressed Cities Technical Assistance program. This program will fund technical assistance to small communities in need of capacity building, including financial management and disaster recovery and planning. The Housing RSF notified eligible communities of the program and provided application details.



PAGE INTENTIONALLY LEFT BLANK

## V. INFRASTRUCTURE SYSTEMS

### Infrastructure State- Federal RSF Team Mission Statement

The mission of the Infrastructure RSF is to identify and integrate the efforts and capabilities of the federal government to support local, state, tribal, territorial infrastructure owners, operators, and authorities within and across jurisdictions to expedite recovery by efficiently restoring infrastructure systems and services while incorporating risk reduction measures to improve resiliency and sustainability.

<b>Infrastructure Systems Partners</b>
<b>Coordinating Agency</b>
U. S. Army Corps of Engineers (USACE)
Missouri Department of Transportation (MODOT)
<b>Primary Agencies</b>
U. S. Department of Homeland Security (DHS)
Federal Emergency Management Agency (FEMA)
U. S. Department of Transportation (DOT)
U.S. Department of Energy (DOE)
<b>Supporting Agencies</b>
U. S. Department of Health and Human Services (HHS)
U. S. Department of Commerce (DOC)
U. S. Environmental Protection Agency (EPA)
U. S. of the Interior (DOI)
U.S. Department of Agriculture (USDA)
U. S. Department of the Treasury
Department of Defense (DOD)
U. S. Department of Education (ED)
Delta Regional Authority (DRA)
General Services Administration (GSA)
United States Geological Survey (USGS)
<b>State Agencies</b>
Missouri Department of Natural Resources
Missouri Association Council of Governments (MACOG)

## Core Actions

The State-Federal RSF Team for Infrastructure Systems is composed of a liaison from FEMA Inter Agency Coordination (IRC), the federal RSF coordinator from the Army Corps of Engineers (USACE), and the state appointed RSF coordinator from the Missouri Department of Transportation (MODOT) who is also serving as appointee to the Governor's Flood Recovery Advisory Working Group (GFRAWG). It works closely with the RSF teams activated for this recovery effort, including Economics, Community Planning Capacity Building, Housing, Natural and Cultural Resources, and Agriculture. It also works with other Missouri state agencies, councils of government, local governments, and larger metropolitan areas. In addition to the agencies listed in the table below, the U.S. Geological Survey, U.S. Fish and Wildlife Service, several individual U.S. Army Corps of Engineers districts, and the Missouri Department of Natural Resources (MDNR) worked with the Infrastructure RSF team in development of this MSA.

In gathering information and data, the State-Federal RSF Team attended a variety of meetings and calls on various topics to establish contacts, including state agency meetings, USACE events, Missouri Water Quality Workgroups, University of Missouri Extension, FEMA Public Assistance meetings, and Whole Community Partner Flood Recovery Meetings with state agency departments and stakeholders, among others. Further information and data were collected through internet sites, documents, databases, and media resources. The Team also attended the monthly Governor's Flood Recovery Advisory Working Group (GFRAWG) meetings, which the state IS RSF coordinator was officially appointed to as a representative of MODOT.

## Analysis and Impacts

The current infrastructure impacts as of December 11, 2019 in Missouri are from two separate disaster declarations. As a result, some FEMA Public Assistance (PA) applications and projects are at a further stage of development than others. The combined projects from these declarations, listed below as 'completed' or 'pending' within PA categories, provides a general overview of the degree and types of damages that have occurred.

PA Program Categories	Completed Projects			Pending Projects		
	DR-4451	DR-4435	Total	DR-4451	DR-4435	Total
A - Debris Removal	32	10	<b>42</b>	56	31	<b>87</b>
B - Emergency Protective Measures	48	47	<b>95</b>	62	9	<b>71</b>
C - Roads and Bridges	71	29	<b>100</b>	187	33	<b>220</b>
D - Water Control Facilities	2	2	<b>4</b>	9	23	<b>32</b>
E - Buildings and Equipment	7	2	<b>9</b>	31	6	<b>37</b>
F - Utilities	19	3	<b>22</b>	41	10	<b>51</b>
G - Parks and Recreational Facilities	4	1	<b>5</b>	20	6	<b>26</b>

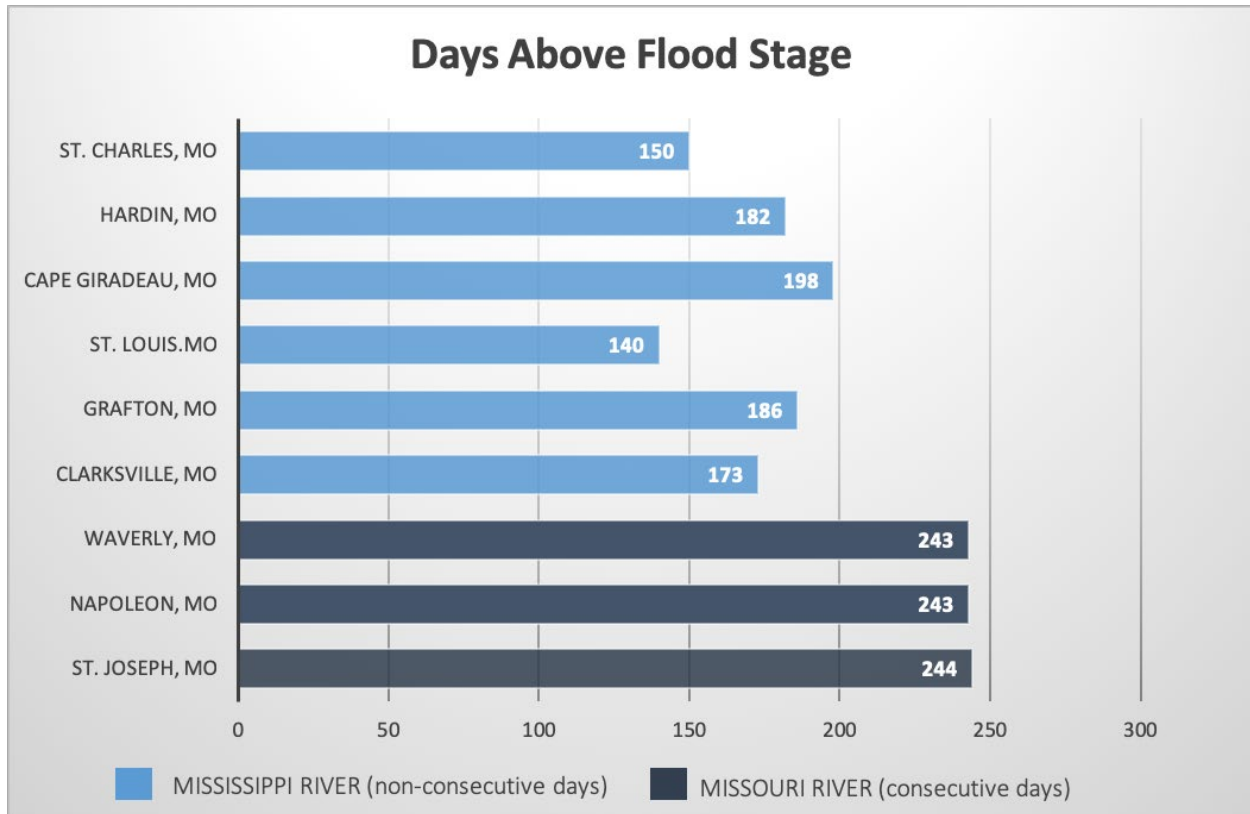
**FEMA Public Assistance Projects as of 12.05.2019**

***Table legend: Completed Projects are completed by the applicant, seeking FEMA reimbursement.***

DR-4435 Declared May 19, 2019 - damage occurred in 20 counties, with 16 counties qualifying for FEMA Public Assistance and FHWA Emergency Relief assistance and 4 counties qualifying for FHWA Emergency Relief assistance only.

DR-4451 Declared July 8, 2019 - damage occurred in 90 counties, with 68 counties qualifying for FEMA Public Assistance and FHWA Emergency Relief assistance along with an additional 22 counties qualifying for FHWA Emergency Relief assistance only. As of December 11, 2019, there have been 351 damage sites identified on state roadways. Approximately \$10,812,660 in damages to non-federal aid routes (FEMA-PA) have been included, for total of estimated damages of \$48,274,250.

During 2019 both the Mississippi and the Missouri Rivers were above flood stage for longer periods of time than what was experienced during the 1993 flood event. As a result of extended flooding by the country's two largest river systems Missouri's impacts have been devastating. The below graph shows total number of days above flood stage for key locations on both the Mississippi and Missouri Rivers in Missouri.



*Data: US Army Corp of Engineers*

### ***Transportation Systems***

Spring flooding of the Missouri and Mississippi Rivers, along with major flooding in areas across the state, and multiple tornados, resulted in significant impacts across the transportation systems in Missouri. Transportation infrastructure damage occurred in at least 90 Missouri counties, with early damage estimates reported at \$383,329,126 for all modes, including air, water, rail and road.

MODOT reported 470 independent road closures during the disaster timeframes, with many routes experiencing multiple closure points. Damages to the highway system took many forms, including washed out bridge approaches, severe undermining and scouring around abutments and piers, numerous washed out roadway sections, extensive road surface damage, extensive shoulder damage and large amounts of debris.



*Figure 12: MO 118 near  
MO 111 at Big Lake*

As of December 2019, there are numerous Missouri roadways that remain closed due to extensive damage or continued high water levels. These closures are largely in the north west region of the state along the Missouri River in the Interstate 29 corridor, which in many areas has been inundated since the first disaster event.

Significant closures included Interstate 29 in Andrew, Holt and Atchison counties due to repeated flooding and pavement damage in Missouri. The counties of Carroll, Chariton, and Livingston in North Central Missouri are also an area with persistent flooding, which frequently closes Highway 65. Closures of Missouri River crossings included US136, US159, and US59. Closures of Mississippi River crossings included US67, US54 and MO51. In addition, nearly 400 Missouri lettered routes, business routes, outer roads, and ramps were also closed.

The large number of closures have created significant economic loss for farmers, residents and businesses by limiting access to many locations and extending travel distances to homes, schools, places of employment, and postal routes. Economic loss estimates for the 75 days of closure on I-29 alone are estimated to be nearly \$104 million. More detailed information on the economic impacts of road closures is highlighted in the Economic RSF section of this MSA.

Both emergency and permanent roadway repairs are taking place as soon as possible after water recedes; however, repeat flooding due to fluctuating river levels and damaged flood protection systems is making the process extremely difficult. An additional factor is that of high volumes of heavy equipment hauling materials for repairs of other damaged infrastructure that have created additional damages to saturated roadways and other haul routes.



*Figure 13: US 159 Bridge  
Near Fortescue, MO*



Opportunities for improving future resilience are being explored during the reconstruction of damaged facilities. However, the inability to match the state share of available federal grant programs, along with the difficulty to adequately justify “betterments” to a facility under current program guidelines, will limit the amount of mitigation and resilience effort during the recovery process.

### ***Utility Systems***

#### **Water Supply & Wastewater Facilities**

As of June 2019, 18 communities had reported sustained flood damage to their drinking water systems, and a total of 52 Missouri communities have reported flood impacts to their waste water treatment facilities (DNR pub 2753 06/2019). There are 5 of these communities that have experienced damages to both their drinking water systems and wastewater facilities.

Both water supply and wastewater facilities can suffer minor damages through which operations can continue during and after an event, or major damages that shut down the system. Typical damages impacting these systems include: access road inundation and plant damages to mechanical and electrical features, intake and outlet distribution lines, electrical supply, and structural damages. MDNR has reported that many functional utilities that experience prolonged inundation still undergo damages to facility components that weaken and compromise their operations and services.

One example is the City of Odessa, MO, where the water supply comes from deep wells located in the Missouri River floodplain landside of both federal and private levees. Pumps are normally operated part of the time; this operation is normally done remotely. Once the remote system

became inoperable because of flood inundation the well platforms that contained the electrical components had to be accessed via boat. Because of safety concerns this became unacceptable and was not a viable solution.

Protecting essential public utilities and making them resilient so they can continue operations during an event or are back on line quickly after a flood, is critical to improving sustainability and reducing risk. Health related issues resulting from disaster impacts can include contamination of potable water supplies which impose boil orders and introduction of raw sewage into surrounding waterways and in some cases, neighborhoods.



*Figure 14:  
Odessa Water  
Supply Platform*

Flooding threatened hazardous waste management facilities and solid waste sites which can contaminate river water. Other affected facilities include petroleum storage, manufacturing facilities, hazardous waste clean-up sites, coal ash disposal sites and solid waste landfills.

As of June 2019, The Missouri Department of Natural Resources (MDNR) was monitoring over 100 sites. Out of the 21 that were still flooded at that time, 11 reported no waste impact; however, 10 petroleum storage tank sites were affected: two with both above and below ground tanks, one underground site, and 7 above ground sites. A coal ash facility and a municipal waste incinerator's ash impoundment were inundated, but no significant discharge has occurred or is expected.

Figure 15: Lexington, MO. Water Supply treatment facility



## Known Issues

### Need for Broader Water Management of Missouri Waterways

***Increased conveyance, flood inundation, and changing weather patterns forecasted.*** The 2019 high flows and flooding of the Missouri River and Mississippi River are record breaking. It is estimated that 1.2 million acres of Missouri land, primarily agriculture flooded in 2019 (GFRAWG Meeting, 2019), and forecasts of future weather patterns and snowpack accumulation indicate a continuation of high flow rates and increased river conveyance demands into 2020 and beyond. The USACE managed Missouri River Flood Control System was overwhelmed by excessive runoff and inflows resulting in major flooding from above Sioux City, Iowa to St. Louis along the river and its tributaries (Water Testimony, 2019).

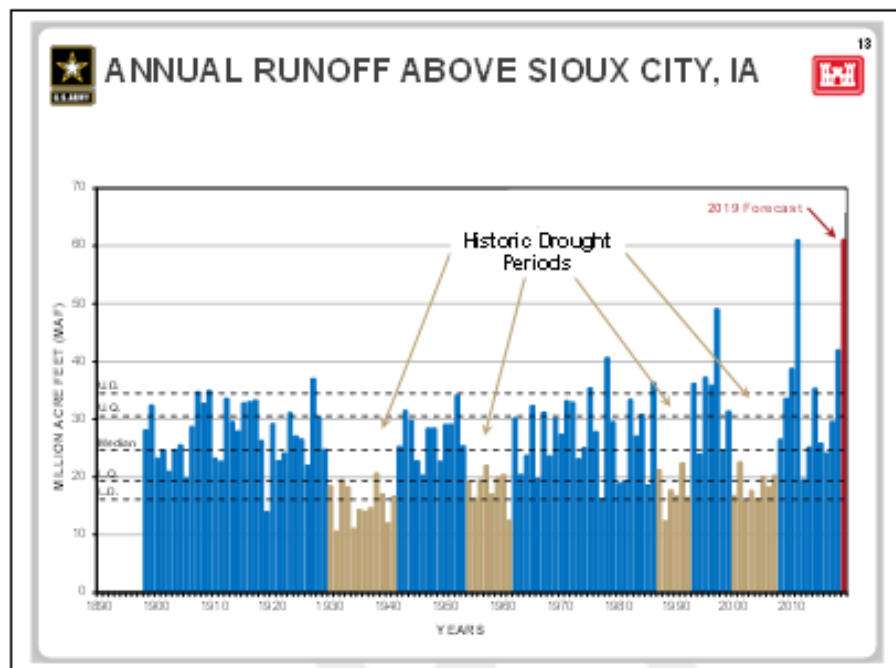
Northwest Division Corps of Engineers conducts annual public meetings, where they present to the public how the Missouri River Basin Water Management plan was implemented based authorized based upon the authorized purposes. During the USACE Fall 2019 Public Meetings, USACE predicted a total 2019 runoff of 61.0 million-acre feet (MAF). If this is the case, 2019 would be the highest runoff year in 121 years of record-keeping, tying the record runoff observed in 2011. The 2019 annual runoff forecast above Sioux City, Iowa is set to match the levels reached in 2011.

The National Weather Service (NWS), Climate Prediction Center reported very wet soil conditions in October of 2019, particularly in the upper Missouri River Basin, which is expected to be present during the spring 2020 snowpack melt. There will be above average fall 2019 and winter 2020 releases to complete the evacuation of stored flood waters and will require the use of

all designated and available flood storage for the runoff season. Based upon the aforementioned items, the soils will not be able to absorb the expected run off. Increased flows have had a detrimental effect on wildlife and accelerated the erosion of sandbars and will create greater run off and conveyance that may affect all recovery support function areas (USACE Meeting PPT, Fall 2019).

### **Need for Broader Inter-State Coordination for Missouri River Management**

Comprehensive management will be necessary to handle the expected increases in conveyance, inundations, and changing weather patterns. The total Missouri River Basin drainage area is 529,350 square miles (338,784,000 acres, 256,654,545 football fields), of which the 6 dams of the Missouri River Mainstem Reservoir System covers 279,480 square miles (178,867,200 acres); however, there is a total unregulated area of the Missouri River of 165,070 square miles (105,644,800 acres) before entering the state of Missouri. The upstream watersheds that affect the state of Missouri are managed and regulated by USACE and other government and private entities, with separate goals and policies. The ability to reduce downstream stages diminishes as you move downstream due to increased travel times and uncontrolled drainage area (USACE Meeting PPT, Fall 2019).



### **Recovery Strategies / Recommendations**

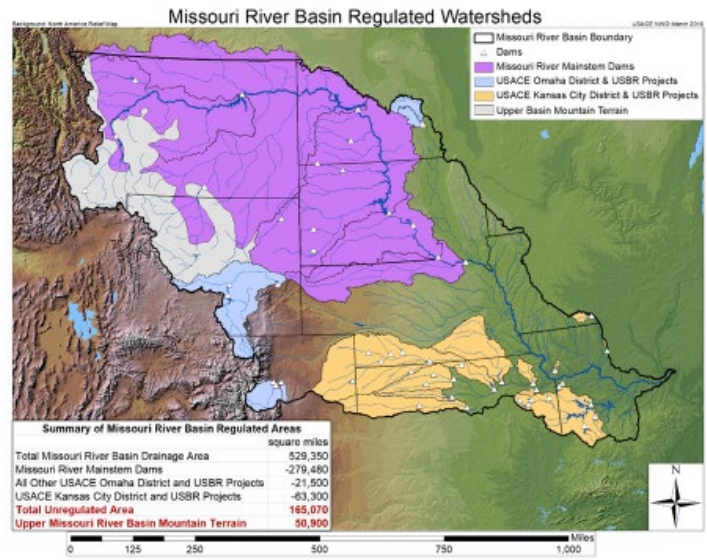
Potential IS-RSF recommendations for the Governor's Taskforce Report might include promoting a more streamlined coordination and interaction between various USACE districts

interacting with the state of Missouri. Another potential IS-RSF recommendation included supporting the Lower Missouri Basin Coalition (LMRC) which consists of a group of organizations advocating for floodplain reconnections and restoration along the Missouri River from Sioux City, IA to St. Louis, MO. Members of LMRC are from Missouri, Kansas, Iowa, and Nebraska. Governor Parson, of Missouri, has continued a dialogue with these states, and they have agreed to sign a memorandum of understanding for government input on the lower Missouri River. The short-term interest of the group is in studying conveyance and identifying and mitigating river pinch points in strategic locations. Pinch points are areas that constrict the flow of water causing higher water levels upstream of the “pinch point”. During flood events this exacerbates inundation levels upstream.

During the October 2019 GFRAWG meeting, the establishment of a Missouri River Commission was suggested. A Commission similar in function to the Lower Mississippi River Commission. Another potential IS-RSF recommendation include supporting the Lower Missouri Basin Coalition (LMRC), in the development of an information system like the Iowa Flood Center program. The Iowa Flood Center program comprehensively monitors that state’s waterways and was originated from a HUD grant left over from Hurricane Sandy. The information system program could be extended in use to other states (GFRAWG Meeting, October 2019).

*Potential Opportunities:*

- Establish a standard method of measuring and monitoring flow in the unregulated river segments in Missouri. Weather and flow data are currently gathered from the National Weather Forecast Center.
- Develop a program similar to the Iowa Flood Center’s “Iowa Flood Information System (IFIS)”
- Enhance and fund The Nature Conservancy’s “Floodplain Prioritization Tool”, recently piloted as a data base program for the Meramec River.



## Need for Enhanced Statewide Water Management Coordination Across Water Management Agencies

Participation in and attendance at both state and local meetings has repeatedly indicated that there are sometimes competing purposes and, in some cases, authorities, when it comes to activities within watersheds. Within the state of Missouri agencies with various responsibilities concerning watershed issues include the Federal Emergency Management Administration (FEMA), the United States Army Corps of Engineers (USACE), the National Oceanic and Atmospheric Administration (NOAA), the United States Geological Survey (USGS), the Environmental Protection Agency (EPA), and the United States Fish and Wildlife Service (USFWS). This mixture of policy makers and regulations enforcement agencies can sometimes lead to misunderstandings that affect regulatory actions and/or funding stream types. Different state, federal and local agencies collect or request data for varying intents and purposes. Close coordination across all agencies can benefit all users of this data.

## Urban expansion and development in bottom lands and flood zones

The presence of levees and floodplain development together can have exacerbating effects. Such urbanization places people and infrastructure at risk, while greatly increasing the amount of impervious surface that causes flooding downstream. Municipalities consistently push for further development in vulnerable areas, and many areas are paved over and filled in immediately next to flood waters. In this way, flood disasters can be a man-made phenomenon. There are numerous FEMA Public Assistance applications for projects in frequently flooded areas near breached or overtopped levees. The Great Rivers Floodplain Alliance has submitted a number of

studies to the Governor's Flood Management Taskforce related to these disasters being man made.

There are many examples of continuing flood plain developments in Missouri. St. Charles, MO is one of the most flood prone regions in the state, having received \$18 million in NFIP flood insurance payouts since 1970. The city is planning a \$1.5 billion riverfront development with apartments and shops located in recently flooded areas. (Even as floods worsen, Midwest towns plan new riverfront development.) After the 1993 floods, Chesterfield, MO built their own levee and continued building commercial businesses and urban development in the previously flooded areas. The City of Chesterfield did not complete an impact study to determine how the levee would affect the other side of the river or downstream communities.

Further examples of floodplain development are frequently found in the news:

- A December 8, 2019 News-Press NOW article “Doniphan County seed business building levee” is an example of all to frequent floodplain activities that have damaging impacts to others in the floodplain.
- The Mound City News, Holt County reports on Nov. 27, 2019 “Long shot plan to save Craig emerges.” The City of Craig plans to raise two roads to essentially build a levee around the town.
- St. Louis Post-Dispatch article dated Nov. 21, 2019 report, FLOODPLAIN DEVELOPMENT reports, Maryland Heights development plan sparks hours of debate. The Maryland Heights Tax Increment Financing Commission has a proposal to create a special taxing district that would finance storm-water pumps, levees and roads in roughly 2,200 of 2,400 low-lying acres along the Missouri River known as the Maryland Park Lake District.
- St. Louis Post-Dispatch article dated Nov. 17, 2019, Floodplain Development, Opinion: As Missouri River remains high, Maryland Heights ignores flooding lessons. Now city leaders in Maryland Heights, eyeing a pot of retail gold promised by developers, want to create a \$151 million tax increment finance district to build levees and pumps to empty the bathtub and replace it with asphalt and roofs from big-box stores.

Development in vulnerable areas that are prone to flooding may be caused by developers, land owners, and local governments may not have the best information on where to build and where it is inadvisable to build. In addition, development is driven by economics and tax base. Builders themselves have to determine the best building practices and location, but this is regulated at the



local level. Many standards are based upon a 100-year flood event or a 1% chance of exceedance in a year. There also may not be proper risk management maps. The NFIP is in the process of creating updated risk maps, so some of the current maps may be out of date. Such maps may be most useful for flash flooding events but are also significant for overall development patterns and resilience.

There are some efforts at the county and local level to limit or create tougher standards for floodplain development, including St. Charles County and Jefferson City (the first to do so). The Missouri Revised Statute 49.605 may make it more difficult for local governments to put in place tougher floodplain measures for unincorporated areas when desired. Sentiment has been expressed at statewide public meetings in favor of reducing commercial and industrial development sprawl such as strip malls and shopping centers (in flood plains) (GFRAWG Meeting, September 2019).

### **Flood Protection System Vulnerabilities**

A number of flood protection system issues are prevalent from the 2019 Missouri floods. Flood protection systems consist of several components. Earthen levees being the most vulnerable component of these systems. There are restrictions on levee rehabilitation. Private levees and dams are not regulated.

Flood protection systems provide multiple levels of risk reduction, and these levels may be misunderstood by stakeholders. Generally, the greatest level of risk reduction is afforded to the most densely populated areas and where risks are greater. A flood protection system that has a 1% chance of being equaled or exceeded in a given year has in the past been identified as a 100-year level of protection, and a level of protection that has a 2% chance of being exceeded has previously been identified as a 50-year level of protection. The take away point is that various flood protection systems are designed to offer different levels of risk reduction. It is not uncommon for large metropolitan areas to have a risk reduction factor of 0.2% (500-year).

The data presented above is presented to provide a better understanding of Flood protection system vulnerabilities. It is the protection systems with higher risk of exceedance that are the most vulnerable to overtopping and inundation. In addition, most flood protection systems are comprised of several co-dependent features such as, drainage features both interior and exterior, groundwater pressure dissipation mechanisms and road and railroad gate closure structure. Drainage features generally consist of gravity drains which allow interior water to flow out during low river stages and are meant to close off exterior high-water intrusion. When high water occurs, pump stations are designed to remove interior waters once gravity drains are no longer draining interior waters. Ground water pressure dissipation features are designed to relieve the



excessive pressure build up in and under flood protection systems that often times are a source of system failures.

### **Need for increased resilience and mitigating features of flood protection systems.**

Major and minor floods have caused numerous impacts in recent years. In the state of Missouri there have been 23 flood-related FEMA declarations have been issued since 2000. In addition to these declarations, several flood events have occurred, which were not declared FEMA recoveries.

Aged and aging infrastructure vulnerabilities infrastructure such as gravity drains, closure gates, relief wells, and pumping and closure structures. The financial element of levee maintenance is also a potential issue. Levee districts collect a district tax as income to support operation, maintenance, repair, replacements and rehabilitation, but many cannot keep up with and sustained routine maintenance.

The consequences aging infrastructure are degrading infrastructure resilience, reduced levee system performance, increased flood risk to leveed areas, increased cost of operations and maintenance (O&M) and rehabilitation, levee districts at risk of losing PL84-99 eligibility (rural areas cannot keep up with maintenance costs), and millions spent in State flood response. (GFRAWG Meeting, 9.20.2019).

“United States Army Corps of Engineers (USACE) has authority under PL84-99, Flood Control and Coastal Emergencies (FCCE) for emergency management activities. Under PL84-99, the Chief of Engineers, acting for the Secretary of the Army, is authorized to undertake activities including disaster preparedness, Advance Measures, emergency operations (Flood Response and Post Flood Response), rehabilitation of flood control works threatened or destroyed by flood”.

All systems considered eligible for PL84-99 rehabilitation assistance have to be in the Rehabilitation and Inspection Program (RIP) prior to the flood event. Acceptable operation and maintenance by the public levee sponsor are verified by the levee inspections conducted by the Corps on a regular basis. The Corps has the responsibility to coordinate levee repair issues with interested Federal, State, and local agencies following natural disaster events where flood control works are damaged

The National Levee Data Base identifies 316 levee systems in the state of Missouri, out of these systems 150 are Federal and 166 are Non-Federal. In addition, there are an uncounted number of levees that are considered private. Federal systems are federally authorized and typically built by the Army Corps of Engineers in cooperation with a local sponsor and then turned over to the local sponsor to operate, maintain, repair, and replace. Non-Federal systems are designed and

built by a non-federal agency which is responsible for the operation, maintenance, repair, and replacement of the system. Private or corporate-owned systems are designed and built by a private citizen, company or other public entity, which is responsible for the operation, maintenance, repair, and replacement of the levee. The Corps of Engineers has no responsibility or oversight for private or corporate-owned levees.

*Potential Opportunities:*

- Identify repeated locations and components of common levee damages.
- Research the hardening of levees to reduce scouring, rather than raising levees.
- Reinforcing of controlled overtopping levee segments (there is a difference between overtopping and levee failure).
- Hardening of intentional levee infrastructure.
- Overflow design for sections to reduce erosion.

**Maintenance of non-federal flood protection systems**

There are numerous non-federal systems that have fallen out of the RIP for the USACE PL84-99 program due to lack of funding which allows the levee system to maintain minimum requirements.

As of December 12, 2019, nine flood protection districts have been identified that are in this situation, time constraints prevented identification of any additional levee districts. When flood protection systems maintain the standard, they are active in the RIP and USACE will monitor them and will rebuild them if damaged during a flood event and they pass the benefit cost requirements. Repairs to federal flood protection systems are 100% federal dollars, while repairs to non-federal systems within the PL84-99 program are cost shared 80/20 with the sponsored district(s). The flood protection system must be active in the RIP before there is damage as it will not be covered if damages occur after the flood event. It would be beneficial to find a way to bring these systems that fall out of PL88-94 back into the program.

*Potential Opportunities:*

- Identify sources of assistance to restore eligibility for participation in the RIP.

**Private levee systems often do not have the capacity to maintain or upgrade.**

Many privately-owned levees are under a greater risk of overtopping and breaching, posing greater risks to agricultural land and businesses. Private levees are not covered under PL84-99 and may not be covered by various funding programs because the cost benefit ratio of investment in the flood protection system does not match the value of the asset being protected. Many funding mechanisms and regulatory functions are also unclear to levee owners and districts, or

conflict with each other. For instance, USACE programs that provide longer term solutions can make FEMA Public Assistance grants for protective measures ineligible. Given the urgency many private levee owners feel to protect their land, this may be a difficult choice. There are also funding programs that are not known to owners, and the state may be reluctant to provide funding because it makes them an investor in the levee.

A functioning levee with at least a 25-year protection level is required to attain crop insurance, which keeps farmers from having insurance. Farmers need to make levee repairs by March 15<sup>th</sup> each year to lock in the repaired insurance rate. More detailed information on issues regarding private agricultural levees can be found in the Agricultural section of this MSA.

*Potential Opportunities:*

- Identify sources of assistance to restore to pre event conditions.

**Need for an inventory of private levees.**

Many private levees are undocumented or their specifics unknown. Information on the dimensions, as well as the occurrence of overtopping and breaches is not available to assess the overall impacts to conveyance capacity of the river. It would be useful for Missouri to create an index of the assets and values protected by private levees.

*Potential Opportunities:*

- Identify and collect detailed data on these systems

**Unmitigated Infrastructural Impacts**

Many components of infrastructure are vulnerable to impacts both inside areas protected by levees and in those well beyond where flash flooding is prevalent. This is apparent in the broad range of flood damages. There are a number of mitigating solutions that can be applied to common infrastructural components that will increase their resilience during flood events.

A consideration in addressing individual cases and broader policy initiatives is how the state government interacts with communities. As a home rule state, there is no state government authority for standardized planning, zoning, or building codes at the local level. There are also no state standards for schools or hospitals. Counties and municipalities set their own standards, which may be different from each other. This may cause disconnects between mitigating solutions and effective policy, and impacted areas.

## *Transportation Systems*

### *Roads*

Consistent with previous flood events, federal, state, and county roads suffered significant damages causing disruptions to transportation and commerce. When road closures occur, traffic is detoured onto less travelled roads, which may then be damaged by the increased traffic and trucks. One opportunity may be to identify and reinforce common alternative routes, such as the Interstate 29 corridor in the northwest, which was inundated in many places in both Missouri and Iowa. In Missouri this route was temporarily inundated and out of service while in Iowa this route is still inundated. Interstate 29 inundation in Iowa is still having a negative impact on the residents of Missouri. Another recurring issue between flood events are roads that have low water crossings, which pose a direct threat to public safety.

A potential issue with addressing these concerns is the coordination of road studies, repairs, and projects between the state and local areas. State roads are the state's responsibility, while county roads are the county's responsibility.

### *Potential Opportunities:*

- Traffic study grants from the Economic Development Agency (EDA).

### *Railroads*

The effects caused by railroad infrastructure, and their responsibility to maintain or mitigate infrastructure is a point of consideration. Railroad features often form a de facto levee or berm that directs runoff and flood plain inundation and affecting communities. There is confusion in many communities over who is ultimately responsible for the resulting impacts. There are a variety of examples that display railroad impacts as a common scenario for flood protection systems throughout Missouri's river basins.

In Holt County in NW Missouri, railroad tracks are elevated in response to varying flood crests. There are not enough railroad trestles to lead landlocked water from behind the tracks. This situation is a factor that affects Interstate 29 (GFRAWG Meeting, September 2019).

In a public assistance case from Weston, MO, it was undetermined whether the applicant, City of Weston, has legal authority for drain culverts under railroad tracks that empty into Bear Creek, and may therefore not be eligible for Public Assistance 406 mitigation funding. It is not clear if the culverts were the responsibility of the railroad. Weston has not maintained these culverts over the last 20 years. The Missouri River backs up into Bear Creek and overtopped the levees that hold it back. The culverts backed up, and the extra water flooded lower Main Street and

nearby lagoons. Water also flowed in from Brill's Creek, backing along the east side of the tracks.

## **Utility Systems**

Flood impacts to public utilities are a recurring issue in Missouri, notably having caused the evacuation of homes and made potable water unavailable during the 2019 floods. The effects on utilities and communities are linked. When utilities are damaged, services cannot be provided to communities, and therefore, citizens must leave. Likewise, when community housing is evacuated there is no population base to purchase services from the utility. Without an income, these facilities cannot perform maintenance, causing many utilities to fall into a constant cycle of disrepair. With rural and dispersed populations common in Missouri, some utilities do not have many customers and cannot keep up with the maintenance costs. It may be useful to consolidate or regionalize utilities, so each facility serves a greater population. Even when utilities remain operational, flooding causes remaining integrity issues. A further gap is that state matching funds are often not sufficient to address the extent and quantity of damages.

Many utilities would benefit from standard mitigation measures. Facilities can be retrofitted with mechanisms for easy removal of mechanical items, such as pumps, motors or electrical supply systems. Electrical control panels can also be moved to higher elevations. Solitary levees can also be built around facilities to protect the entire structure. A good example is the Missouri University Levee, St. Peters Water District.

### *Potential Opportunity:*

- Identify potential projects to apply mitigation concepts.
- Elevate pumps where needed.

## **Need for Sustainable and Green Infrastructure**

Environmental groups and public meeting participants have mentioned the usefulness of alternative solutions and natural infrastructure for flooding. Increasing the amount of mitigation acres and levee setbacks has been proposed as useful remedies. This method has gone unpracticed even when recognized as useful, such as in Sioux City, IA. The Galloway Study done after the 1993 floods stated that the levee setback was not sufficient (GFMWG Notes, September 2019).

A notable project is the levee set back project in Pike County that is part of the Clarence Cannon Wildlife Refuge. This project involved a combination of re-attaching wetlands, as well as levee improvements and water control features such as pump stations. Part of the approved plan called

for a levee setback. This setback provides floodplain storage benefits and sustains dynamics of the river system, which depends on recurring flood events. This was done entirely on federal property and was therefore, effectively coordinated. It may be more challenging to achieve this in a private property setting. A useful approach is to have flood control infrastructure where it makes sense, while leaving room for ecological restoration and buyouts.

Funding buyouts for riparian lands and properties is an effective measure in reducing flood plain risk. Previous initiatives have been taken in this regard but have not been fully funded. Those acres can be varied in use (wetlands, shallow water habitat, ...). Conservation easements, and potentially, covenants (getting people involved in covenants can be difficult), are useful mechanisms to create these spaces. It can be difficult working with the agricultural industry to achieve these aims due to concerns over the areas affected by individual levees, and because few are willing to give up their agricultural lands, some of which has been farmed by individual families for over a century.

One of the most notable examples of reclaimed land is the Big Muddy National Wildlife Reservoir, which was created after the 1993 floods. It was mentioned that near the Overton Bottoms section of the Big Muddy the water does not come up anymore and levees are not needed. Those lands are resilient and public. Details about this site can be found at the U.S. Fish and Wildlife Service web site.

Green infrastructure provides solutions for both urban and rural areas. Local municipalities can gain resilience and other benefits from developing a more natural landscape. Such infrastructure will be especially useful in mitigating flash flooding in areas farther from flood plains.

Potential Opportunities:

- National Disaster Resiliency Grant Competition - HUD
- NRCS, Wetland Reserve Program (WRP)

The NRCS Wetland Reserve Program is an easement program that funds property to turn back to wetlands from an agricultural state. A piece of property is enrolled to be converted. Any eligible USDA active farmer can enroll by registering the property with USDA. Successful applicants receive a USDA cash payment. Farmers can enroll part of a property and receive a regular payment for having the easement. This creates less risk than having crops, but also less profit.

PAGE INTENTIONALLY LEFT BLANK





PAGE INTENTIONALLY LEFT BLANK

## VI. NATURAL AND CULTURAL RESOURCES

### NCR State-Federal RSF Team Mission Statement

The mission of the Natural and Cultural Resources (NCR) Recovery Support Function (RSF), as stated in the National Disaster Recovery Framework (NDRF), is to “integrate Federal assets and capabilities to help State and Tribal governments and communities address long-term environmental and cultural resource recovery needs after large-scale and catastrophic incidents.”

Similarly, Missouri has adopted a state disaster recovery framework that mirrors the NDRF. The mission of the State NCR RSF is to coordinate and integrate the capabilities of state, local, private sector and nonprofits partners for recovery of natural and cultural and historic sites and interests. The lead agency coordinating recovery efforts for the NCR RSF is the Missouri Department of Natural Resources.

Jointly, the NCR RSFs have established a team to facilitate the integration of the capabilities of all partners to support the protection of natural and cultural resources and historic properties in the state Missouri. This effort is done through appropriate response and recovery actions to preserve, conserve, rehabilitate, and restore them consistent with post-disaster community priorities and in compliance with applicable environmental and historical preservation laws and Executive orders.

<b>Natural and Cultural Resources</b>
<b>Coordinating Agency</b>
U. S. Department of the Interior (DOI)
<b>Primary Agencies</b>
U. S. Department of Homeland Security (DHS)
Federal Emergency Management Agency (FEMA)
U. S. Department of the Interior (DOI)
U.S. Environmental Protection Agency (EPA)
<b>Supporting Agencies</b>
U. S. Department of Agriculture (USDA)
Natural Resources Conservation Service (NRCS)
U. S. Army Corps of Engineers (USACE)
U. S. Forest Services
U.S. Fish and Wildlife Services

National Park Service
<b>State and/or Local Agencies</b>
Missouri Department of Natural Resources
Missouri Department of Conservation
Missouri Department of Historic Preservation
Missouri State Library
University of Missouri

As stated in the NDRF, the NCR State-Federal RSF Team facilitates the extension of expertise from Federal departments, agencies and partners so that:

- Considerations related to the management and protection of NCR, community sustainability and compliance with environmental planning and historic preservation requirements can be incorporated into long-term recovery efforts.
- State and tribal governments and local communities are ready to address post-disaster long-term natural and cultural resource recovery needs.
- Programs that support disaster recovery, technical assistance, and data sharing can be coordinated.
- Post-disaster natural and cultural resource assessments and studies can be identified and conducted.

## Core Actions

A variety of methods were used to identify and capture NCR issues. Conversations and information sessions took place with Missouri program leads and directors including MO Department of Natural Resources, Missouri Department of Conservation; Federal agencies, i.e. FEMA, the U.S. Army Corps of Engineers (USACE), U.S. Geological Survey (USGS), U.S. Fish and Wildlife Service (FWS), the National Park Service (NPS), and U.S. Forest Service (FS). Anecdotal and qualitative data was received from local news outlets, community members, and FEMA external affairs personnel. Data gaps exist due to the limited extent of damage assessments, and because FEMA Public Assistance (PA) determinations are still ongoing.

## Analysis and Impacts

### Background

The flooding and tornadoes of 2019 significantly impacted Missouri's parks and recreation areas, environmental quality and habitats, and historic and cultural resources. Parks, recreation zones, and cultural sites and venues constitute vital contributors to the state economy as major tourist hubs and attractions. The State noted that, currently, damage assessments to these resources is incomplete. Assessments need to continue, not just for the immediate response and recovery, but for future resilience from impending weather and disaster cycles (i.e. impending floods, draughts, and tornadoes). Further assessment and evaluation of 2019's inundation and tornado impact upon any of these resources should be included in the recovery strategy (DR4451-MO AE Report, Sept.2019).

### Parks and Recreation

The mission of the state park system within the Missouri Department of Natural Resources (DNR) is to preserve the state's most outstanding natural and cultural features while providing compatible recreational opportunities. The park system consists of more than 140,000 acres and includes places of cultural and historic significance such as, the homes of famous Missourians, gristmills, and covered bridges, and parts of the Lewis and Clark expedition. Each year, almost 17 million people visit the state's parks and historic sites.

Three-fourths of the funding for Missouri's 84 state parks and historic sites comes from the parks, soils and water sales tax. The department also coordinates federal grant programs that provide financial assistance in the areas of outdoor recreation and trails development.



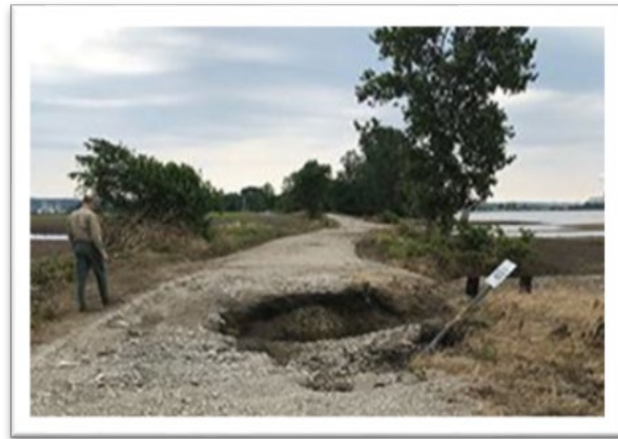
*Figure 16: flood inundated trail and bridge in Katy Trail Park*

Initial reports indicate an estimated 18 State Parks had significant damages; some required complete closures (MO DNR, Personal communication,2019). As assessments continue, State park staff expect to find scour holes, washouts, bridge damage, downed trees, debris, silt

accumulation, and inconsistent trail surfacing. To date, the damage is assessed at approximately \$6 million. Many of the parks have experienced significant attendee declines between 2017 and 2018 (mostateparks.com,2019). The 2019 disasters likely exasperated the trailing attendance and resultant revenue losses.

The historic Katy Trail State Park contains the Katy Trail, the country's longest recreational rail-to-trail. It runs 240 miles, largely along the Missouri River. Over half the trail's length follows the Lewis and Clark path up the river. Severe flooding at Katy Trail State Park caused numerous trail closures and cancellation of the 2019 Katy Trail Ride. Nearly 100 miles of trail were inundated. The full impact is still undergoing assessment.

*Figure 17: Trail damage in Katy Trail Park*



Big Lake State Park, located in Craig County, was one of the most flood damaged areas. The park is adjacent to Big Lake, the largest oxbow lake in the state. *(An oxbow lake is a curved lake formed where the main stream of the river has cut across the narrow end and no longer flows around the loop of the bend.)* Flooding led to the evacuation of the residents around Big Lake. Many of the residents may not return. The park closed and is expected to remain closed through 2020 (mostateparks.com, 2019). Along with direct damage to the parks, some parks may continue to experience reduced attendance because of road closures and detours, (i.e. Rt 64). In addition to Missouri's Department of Natural Resources (DNR), MO State Parks' partners that may assist in the assessment and recovery include: the Nature Conservancy, Watershed Committee of the Ozarks, Mark Twain, Forest Watchers, Sierra Club, MO Forest Products Association, Ozark Trail Association, MO Department of Natural Resources, Back Country Horsemen of Missouri, FEMA, LAD-Pioneer Forest, MO Moto Trail Riders, Brushy Creek Lodge, MO Department of Conservation, Foxtrotters Association, Shell Knob Chamber, Ava Chamber, MO Bicycle Federation, and the Conservation Federation of Missouri. City parks remain to be evaluated (MO DNR, Personal communication, 2019).

DNR, MO State Parks has indicated that funding for recovery will come from Public Assistance and State Parks maintenance funds; no additional assistance is requested at this date.

*Figure 20: Big Lake,  
Missouri by  
Barnes Realty  
February 23, 2018*



## **Environment**

**Watersheds and wetlands:** There are approximately 66 designated watersheds in Missouri. The watersheds are primarily managed by the Missouri Department of Conservation (MDC). During the flooding events, debris, sediment, agriculture, septic and other “non-point-source” contaminants were carried through the flood waters, transferred and redeposited on farmland and water system resources. Redeposited sediment disrupts fish habitats and natural fish passage. Watersheds and water quality impact all-natural resources in Missouri and crosses into each RSF. Partners include: Missouri’s Department of Natural Resources (DNR), USACE, the Environmental Protection Agency (EPA), USGS, the National Oceanic and Atmospheric Administration (NOAA), the National Weather Service (NWS),

The Nature Conservancy Conservation Federation of Missouri and vested non-governmental organizations. Within the watersheds, wetlands are the primary habitat of 200 plant and animal species considered endemic, threatened or endangered in Missouri. Millions of ducks and shorebirds that migrate through the state each year depend on wetlands for food and shelter. Missouri's 43 species of amphibians depend on wetlands for breeding and larval development (mdc.mo.gov, 2001).





Missouri has a total of 66 watersheds that contain 115,000 miles of streams and rivers and 3,080 lakes and reservoirs. This map shows the U.S. Geological Survey 8-digit hydraulic unit listing of watersheds which is the primary delineation used by the Missouri Department of Conservation.

The Hydrologic Unit Code, or HUC, system is a way to classify watersheds by size. Every hydrologic unit is identified by a unique HUC (a number containing two to 12 digits). The bigger the HUC number, the smaller the watershed. ([mdc.mo.gov](http://mdc.mo.gov), 2015)

Wetlands, especially those located in riparian corridors, may have been adversely affected by the flood. Intrusion of debris and sediment, as well as destruction of water-holding capacity, can reduce the ecological and recreational services provided by these wetlands. Wetlands provide important habitat for waterfowl, fish, amphibians, and mammals. They are the base for fishing, hunting, birding, and other recreational activities. Partners include US Fish and Wildlife Service, Department of Conservation, and vested non-governmental organizations.

## Invasive Species

Waterways are the key "vectors of spread" for invasive species due to the variety of weed seeds and plant parts located in a concentrated area, and with access to transport downstream. Weed seeds and plant fragments that can reproduce are released where flood waters scour river banks and have been carried downstream. They will likely converge in depositional areas, or any place where they're no longer suspended in water. A re-invasion of scoured areas over time is likely as riparian areas recover and plants re-colonize from upper banks, tributaries, washes, etc.

There is a possibility of new invasion in downstream areas from existing upstream noxious weed populations. Riparian areas are the most floristically diverse regions of the state—both for native and invasive plants. Surveys of flooded regions should be conducted to identify, map, and treat

new populations within the first year or two, so new populations do not become established and thus become an expensive, long-term problem.

## **Historic Sites and Properties**

Missouri has a rich history and there remains a plethora of historic sites and archeological artifacts and locations. A full inventory of damaged sites is yet to be completed.

An unknown number of archaeological sites also may have been adversely affected in the flood impact zones. There is a potential to discover previously unidentified properties (i.e. not surveyed and/or unknown archeological resources). A key challenge will be to identify, and map known historic and cultural properties as well as identify areas of high, medium, and low potential for identifying previously unknown archaeological sites.

Archaeological resources are irreplaceable and sensitive to disturbance, so information about them will need to be tightly controlled through the State Historic Preservation Office (SHPO). Partners include SHPO, Missouri State Library, FEMA Heritage Emergency National Task Force, Smithsonian, Library of Congress, Dept. of Archives and vested non-government organizations.

## **Cultural Resources**

Additional cultural resources affected by the flood include small historic artifact collections, museums, and libraries. As more flood damage information is released, an inventory of damaged libraries, museums and points of local interest will be made available. Partners include Missouri's State Historic Preservation Office (SHPO), FEMA Heritage Emergency National Task Force, Smithsonian, Library of Congress, the Department of Archives, Missouri State Library and vested non-government organizations. The NCR State-Federal team has suggested resources to the State Historic Preservation Office SHPO and other State cultural agencies. To date no request has been made for additional assistance.

## **Known Issues**

The State - Federal RSF team has validated the following issues for consideration:

***Design of flood corridors:*** Nature based flood corridor designs, which include wetlands and riparian areas will reduce future flood and act as water filters and improve ecosystems.

***Erosion & Sedimentation:*** riparian restoration: Continued flooding results in land loss – erosion, and sediment migration reduces arable farm land and wetlands, impacting the economy and ecosystems.



***Wildlife Habitats Impact:*** Flooding devastates wildlife habitats, and the balance of established ecosystems, resulting in loss of breeding grounds and consequently, causing a reduction in the vast number of diverse species.

#### State-Federal RSF Team Cross-Cutting Issues:

***Infrastructure:*** Need for broader river and water system management.

***Agriculture:*** Data and reporting of impacts. Erosion control and sediment migration. Emergency wetlands and floodplain programs.

***Economics:*** Revenue loss & threatened employment opportunities and tourism

***Community and Capacity Building:*** Centers for the arts & cultural sites are important for communities to maintain as sites for engagement, heritage conservation, and state pride.

#### Recovery Needs

***Funding Gaps.*** FEMA Public Assistance is still under review. Funding gaps may exist for projects that do not qualify for FEMA Public Assistance Funding.

***Release and Exposure of Hazardous Substances.*** Due to the extent of the flooding events, this issue should be anticipated. Currently, there lacks data to support abnormal conditions. However, as time continues and water retention continues, the risk rises for toxins to be released.

Until issues are brought to the agency's attention, there remains a risk of having several environmental damages unidentified. The flooding events may have caused the migration of hazardous substances, e-coli, nutrients may migrate into and from farm lands, ecological sensitive areas and water resources.

#### Recovery Strategies for Considerations

***NCR Damage Assessment.*** Continued damage assessments are required in order to address and identify critical projects that FEMA does not cover with Public Assistance funding. For this to be successful, collaboration between state agencies needs to be strengthened to ensure that data is shared between partners.

***Outreach and Technical Assistance.*** A key strategy for supporting the state agencies is to provide education and resource guidance that Federal partners have to offer. Outreach to counties and local governments will be helpful to spread vital information that is needed for getting recovery support.

This document is a first glimpse of high-level natural and cultural resource issues identified by the Federal and State Recovery Support Functions (RSFs). The problems that Missouri faces cut across multiple subject areas. Natural and cultural resources is at the heart of many damages and recovery challenges. By addressing the findings outlined, NCR will be able to contribute to a comprehensive, collaborative effort that will have cascading influence on the overall health and resiliency of Missouri's environmental infrastructure, natural resource quality, and cultural/historical resource inventory.

In the forthcoming document, the Recovery Support Strategy (RSS), strategies will be outlined that detail the structure and protocols for coordinating the Federal Interagency recovery support for NCR related issues.

PAGE INTENTIONALLY LEFT BLANK



PAGE INTENTIONALLY LEFT BLANK

## ANNEXES

### Community Conditions Assessment (CCA) Methodology

#### General CCA Methodology Details

As described, these communities were selected and ordered through a comprehensive analysis of community planning and capacity building needs and opportunities identified through multiple components of the broad CCA process. The generalized components of the CCA process are as follows:

##### *Community Comparative Data Tables*

- By County, Place, and/or Census units
- Impacts or damages data points
- Key indicator demographics
- Social Vulnerability Index score
- Key capacity data points, such as community plans and planning staff, local mitigation plan status, municipal financial/capability data

##### *Capacity/Resilience Evaluation*

- Data and analysis of local capacity quantitative and qualitative information
- Intergovernmental and municipal planning elements
- Financial, management, staffing information
- Resilience factors and indicators

##### *Impact versus Capacity Matrix*

- Charting on a grid of impact level versus a local capacity score to identify communities of interest from a basic capacity and potential for acute outside assistance need.

##### *Identification of Communities of Interest and Community Profiling*

- Snapshots or profiles consolidate information in a focused analysis and narrative to provide a clear picture of issues and opportunities in specific communities identified by the partners as potential focal points for planning, recovery management, capacity building or resilience building.

## Specific CCA Methodology for DR 4435-MO and DR 4451-MO

CPCB staff was deployed to Missouri in mid-September of 2019 and began assessing the impacts of the spring and summer flooding. In addition to the assessment of impacts, CPCB staff considered pre-disaster planning and management capability and capacity challenges. They also reviewed FEMA public assistance and individual assistance damage assessments to specifically identify which communities have the greatest needs and what those needs are to further scope and refine CPCB's disaster recovery mission in Missouri. CPCB staff took on this mission scoping process in coordination and collaboration with the newly formed state Community RSF, which is led by Missouri's Department of Economic Development and serves as the state counterpart to the federal CPCB RSF under the Missouri Disaster Recovery Framework (MDRF).

The mission scoping process for CPCB centered around the development of a Community Conditions Assessment (CCA), a standard yet adaptable process CPCB uses to identify specific communities with the greatest recovery needs and assistance opportunities. CPCB then uses the information gathered through this process to clarify its mission and identify potential issues to address in the Recovery Support Strategy (RSS).

The CPCB RSF's CCA process compares baseline conditions and disaster impact data relevant to perceived capacity to recover, based primarily on publicly available information at a set point in time, to determine a set of focus communities with the greatest disaster impact and the least capacity to manage and plan for recovery.

For DR-4435-MO and DR-4451-MO, the CCA process included development and analysis of a CCA Data Analysis Table. The data analysis scored 67 of the most impacted communities based on 32 variables indicating disaster impact, recovery planning and management capacity, and social vulnerability (considered an aspect of recovery capacity), deriving a combined capacity and impact score for each. The 86 declared counties (across both disaster declarations) and the independent City of St. Louis underwent a similar comparative scoring analysis, utilizing 34 variables. The final scores for all 67 analyzed communities and the Top 30 counties were categorized according to comparative level of impact (lower, moderate, higher) and comparative resilient recovery capacity (higher, moderate, lower) and plotted on an Impact vs. Capacity Matrix, with Impact plotted on the X-axis of the chart and Capacity plotted on the Y-axis of the chart.

## Impact vs. Capacity Matrix for Top 30 Impacted Counties

	Lower Impact	Moderate Impact	Higher Impact	
Lower Capacity	Forsyth Jasper Blodgett Rock Port East Prairie Elsberry Barnhart Trimble	Lewis and Clark Village Caruthersville Chamois Glasgow Kimmswick Eldon Old Monroe Hornersville New Madrid Osceola Waverly Anderson	Craig Foley Levasy Annada Brunswick Portage Des Sioux Rosendale Winfield Watson West Alton Clarksville Big Lake	Lower Capacity
Moderate Capacity	Clinton Fayette Miami Hermann Windsor Place Waynesville Chillicothe Edgerton Webb City Raytown Boonville Cape Girardeau	Mound City La Grange Crystal City Lexington Herculaneum Moberly Lebanon Carrollton West Plains Hannibal Agency Jackson Neosho Savannah	Louisiana	Moderate Capacity
Higher Capacity	Carl Junction Parkville Arnold Smithville St. Charles O' Fallon	St. Joseph Jefferson City		Higher Capacity
	Lower Impact	Moderate Impact	Higher Impact	

## Impact vs. Capacity Matrix for Impacted Communities

	Low Impact	Moderate Impact	High Impact	
Low Capacity	Mississippi Dade Gasconade Gentry Davies Benton	Ste. Genevieve Clark Saline Howard Lewis Pulaski Grundy	Holt Atchison Chariton Pike	Low Capacity
Moderate Capacity		Newton Perry Callaway Ray Jackson	Andrew Carroll Lincoln Miller Livingston Buchanan	Moderate Capacity
High Capacity			Cole St. Charles	High Capacity
	Low Impact	Moderate Impact	High Impact	



The second component of the CCA is the ongoing process of working with the state's Community RSF to seek input on priorities and concerns in specific communities from partners such as the Missouri Department of Economic Development (DED), the Missouri Housing Development Commission (MHDC), the Missouri Department of Transportation (MODOT), and the Missouri Department of Mental Health (DMH), among others. As well, regional and local partners, such as Regional Planning Commissions and Councils of Government, Missouri Extension, Missouri Community Betterment, the Missouri Municipal League, and Long-Term Recovery Committees, among others were consulted. Information gathered from these partners will also be incorporated into future potential updates of the CCA data table and the overall analysis. This information will be considered in determining which types of assistance CPCB will recommend in the Recovery Support Strategy (RSS) and to which communities that assistance may be offered. A Whole Community Partners meeting, held on November 25, 2019, served as a culminating experience of the mission scoping process; the meeting engaged partners from across the state in a full day of presentations and discussion sessions and provided much of the verification and corroboration for the CPCB and State Community RSF Team's (CPCB team) initial findings.

## Infrastructure Related Articles

### **Long shot plan to save Craig emerges**

[Mound City News](#), Holt County

Nov. 27, 2019

EA NOTE: Cannot copy text into clips. Click on link to read full story.

**Summary:** Craig Clerk Missy Foster tells reporter they plan to raise two roads (Daisy and Dandelion) to essentially build a levee around the town, which will be expensive. ... The NW Missouri Regional Council of Governments will be at Craig's next (county commissioners?) meeting in December to talk about funding mechanisms such as grants.

### **Doniphan County seed business building levee**

[By Ray Scherer News-Press NOW.](#)

Dec 8, 2019

**EA Note: White Cloud Kansas is right across the Missouri River from St. Joseph and Mound City.**

WHITE CLOUD, Kansas — Trying to stave off the dangers of future Missouri River flooding rests heavily on the mind of one rural Doniphan County business these days.

Taylor Seed Farms, located just south of White Cloud, Kansas, began the herculean task of building a protective levee in front of its property nearly two weeks ago. Manager Jason Taylor told News-Press NOW the project is vital to ensuring the business does not suffer the same level of severity from floodwaters it's experienced this year, along with in 2011 and 1993.

"It was the third time that our office flooded," Taylor said. "(Flooding) seems like it's being more frequent. ... We'll still move seed out. We hope to have that (levee) done by the end of the year."

Despite the river's interference, Taylor said the business has been able to ship out its seed products to all of its customers. Yet along with the levee, Taylor also plans to build a new driveway for trucks to enter and exit the complex. He said the last three or four feet of standing water recedes quickly off the property.

Because of this year's widespread flooding, the company was forced to operate out of five different locations — including one in Hiawatha, Kansas — that were within a 20-mile radius of the business.

"Basically, we were in operation," said Taylor of the remote-style work in sales, distribution and other areas. "It was a struggle. That (flood) really disrupts things. It creates a lot of work."

Ensuring that customer orders were efficiently delivered called for more coordination and timing by the staff.

"They were very understanding," Taylor said.

It's hoped the weather will hold and allow the six workers to make major progress toward completing the levee before 2020 begins. The timing works out well, as staff are only involved in equipment maintenance for now.

“We can’t get out into the fields” due to the flooding, lamented Taylor. “We had a little down time.”

Although costs still need to be totaled, Taylor said building the levee will be a cheaper option. The company is relying on its own construction equipment and labor for the project.

The independent, family-owned business was founded in 1981 and also oversees corn and soybean seed plots in a genetics research program.

## **Maryland Heights development plan sparks hours of debate (St. Louis Post-Dispatch)**

By Nassim Benchaabane

[St. Louis Post-Dispatch](#)

Nov. 21, 2019 – 8pm

MARYLAND HEIGHTS — Property owners long seeking to develop a low-lying swath of land along the Missouri River here urged officials Thursday to finance more than \$100 million to drain and build infrastructure in the area, as environmentalists warned the project would worsen flooding throughout the region.

The Maryland Heights TIF Commission heard more than two hours of public comment Thursday on a proposal to create a special taxing district that would finance storm-water pumps, levees and roads in roughly 2,200 of 2,400 low-lying acres along the Missouri River known as the Maryland Park Lake District. A second public hearing is scheduled for Dec. 18.

The plan would pay for infrastructure costs that have long been an obstacle to property owners’ and city officials’ desire to develop the area. The city envisions up to \$1.23 billion of private construction and infrastructure in the area for a mix of commercial, residential and industrial development.

Private development costs wouldn’t be financed by the tax increment financing district, but the TIF district and two contemplated special sales tax districts would cover up to \$178 million in infrastructure costs and fees from lawyers, engineers and other consultants. The city is working on a cooperative agreement with a fire district and two school districts that lie within the area.

“The city’s goal is not to haphazardly encourage development or to profit off it, but to facilitate responsible and long sighted growth that will bring people, private investment and jobs to the region over the long term,” said Jim Carver, the city’s economic development manager.

Property owners in the area formed a levee district years ago and taxed themselves to build a 500-year levee, but major development has not followed. The TIF plan would help bring those property owners relief from recent flooding and protect amenities there including Creve Coeur Park, said Ron Konabbe, a fifth-generation farmer in the area.

“If you want the roads dry, the park open, the soccer fields accessible and you want to have economic growth, approve the TIF plan,” Konabbe said.

But the project would worsen flooding predicted to hit the St. Louis region by pushing water collected in the area downstream to other communities, said David Stokes, executive director of the nonprofit Great Rivers Habitat Alliance. The worsened flooding and loss of habitat for wildlife in the area would come with no guarantee that development in the area would bring revenue in the long term, he said.

“It won’t grow our economy,” he said. “It will damage our environment. It will make flooding worse. It’s going to be very harmful for our region.”

Megan Wunderlich of West Alton said she was sympathetic to building stormwater pumps to help property owners after recent flooding, but she is staunchly opposed to further development on the land. West Alton, which lies between the Mississippi and Missouri rivers, has been particularly affected by flooding downstream from other cities with levees.

“Think about your neighbors,” she said. “Think about us.”

## **Opinion: As Missouri River remains high, Maryland Heights ignores flooding lessons (St. Louis Post-Dispatch)**

By Tony Messenger, Columnist

[St. Louis Post-Dispatch](#)

Nov. 17, 2019

For 25 years, Toni Armstrong has enjoyed the occasional respite surrounded by nature in Creve Coeur Lake Memorial Park.

The 65-year-old Maryland Heights resident has walked, biked and paddled there. She’s seen the water rise and fall. She saw hundreds of trees downed and dozens of acres scraped flat by bulldozers a couple of years ago when the county planned to build an ice rink in the park but was stopped because the entire process had bypassed federal and state environmental protections.

“We eventually lose when we attempt to tame the natural world, whether it is levees, dams, mining operations,” Armstrong says. “I watched in dismay, but not surprise, the flooding in northwest Missouri as levees were breached or broke earlier this year.”

When that water, from massive rains throughout the Midwest that flooded the entire Missouri River basin and much of the upper Mississippi River Basin, made its way to St. Louis, the area near where Armstrong lives, the floodplain that surrounds the Creve Coeur park, turned into a virtual “bathtub,” she says.

That water has subsided, though upstream in Nebraska and the Dakotas river watchers are already sounding alarm bells about the potential for more flooding this winter and spring.

Now city leaders in Maryland Heights, eyeing a pot of retail gold promised by developers, want to create [a \\$151 million tax increment finance district](#) to build levees and pumps to empty the bathtub and replace it with asphalt and roofs from big-box stores.

It's madness, Armstrong says.

"I lived in St. Louis in 1993 and remember the floodwaters in Maryland Park Lake District," she says. "When is the next catastrophic flood that breaches the levee?"

David Stokes knows the answer to that question.

It could be this spring. And if not next year, then the year after that. Or maybe a couple more years. But it's coming.

"Their action," Stokes says of the Maryland Heights City Council, "will make flooding worse. The city doesn't care at all."

Stokes is the executive director of the Great Rivers Habitat Alliance. The nonprofit organization has been working for years to raise awareness about how bad development policy — particularly when cities offer tax incentives to build in the flood plain — makes flooding in the St. Louis region worse, and also does little to raise the economic performance of the region as a whole.

He's urging the St. Louis County TIF Commission to turn down the Maryland Heights proposal. The commission will hold a hearing on the issue [at 5:30 p.m. Thursday](#) at the Maryland Heights Government Center.

"They're never going to be able to answer the question about the next time a big rain comes during a time that the river is up. Where's that water going to go?" Stokes asks. "It's going to flood somebody."

For Stokes and other flood plain preservation activists, it's a lonely battle standing up to elected officials who can't see beyond the sales tax revenue promised by developers and their phalanx of experts. They have the economic research and the flood policy research on their side. Building retail developments in areas destined to flood again, and using taxpayer dollars to do it, is throwing good money after bad. But all over St. Louis — and the country — elected officials turn their backs on the data time after time.

"It's so frustrating to have all the research on our side and have it completely ignored," Stokes says.

A [series of maps](#) on the habitat alliance website show the effect the Howard Bend Levee in Maryland Heights has had on the rising water across the Missouri River in St. Charles County. Regular flooding is getting worse in the Main Street area of St. Charles, in part because of what is happening in St. Louis County.

Building more levees, and adding more pumps, might keep the water off Highway 141; it might allow Marine Avenue to remain open during high-water events, but the water has to go somewhere, Stokes says.

And that's precisely what should happen to the proposed retail development.

If the St. Louis region can sustain it, then build it somewhere else. Not in a flood plain. Not with taxpayers padding the developer's pockets, Stokes says.

For Armstrong, there's another issue.

Her daughter graduated from Parkway schools. It was a good education, she says. But what happens to the next generation when the tax dollars within the financing district start being diverted from Parkway and Pattonville school districts?

Who wins then?

"The winners won't be the residents of Parkway and Pattonville school districts, or the residents of Maryland Heights, or taxpayers, or the users of Creve Coeur park," Armstrong says. "The beneficiaries in the short run could be the landowners who have gambled in paying for a levee as the flooding risk increases each year. Should the taxpayers reward that gamble? I think not."

PAGE INTENTIONALLY LEFT BLANK

## References

- An Assessment of Federal Recovery Efforts from Recent Disasters: Hearing before the Subcommittee on Economic Development, Public Buildings, and Emergency Management. Committee of Transportation and Infrastructure, House of Representatives, 116<sup>th</sup> Cong. (2019). Statement of Rhonda Wiley.
- Anderson, B. (2019, October 1). Governor Parson Tours Flooded Areas of Rural Northwest Missouri. Retrieved from <https://www.kq2.com/content/news/Parson-in-MO-561923181.html>
- Ashcroft, J (2019). Missouri History. *Why is Missouri Called the “Show-Me” State?* Retrieved from <https://www.sos.mo.gov/archives/history/slogan.asp>.
- Assistant Chief Safety & Operations Officer, Missouri Department of Transportation. (October 17, 2019). Flood Recovery Advisory Working Group meeting.
- Associated Press. (2019, September 27). Clarksville gets \$700k Federal Grant to Design Movable Flood Wall. Retrieved from <https://www.ksdk.com/article/news/local/clarksville-gets-700k-federal-grant-to-design-moveable-flood-wall/63-b151e3ed-12ea-4d69-aba3-bcd01a21b747>
- Benchabane, N. (2019, November 21). Maryland Heights development plan sparks hours of debate. St. Louis Post-Dispatch. Retrieved from [https://www.stltoday.com/maryland-heights-development-plan-sparks-hours-of-debate/article\\_ff7e1a1c-ea48-5a16-8c69-95b941687e45.html](https://www.stltoday.com/maryland-heights-development-plan-sparks-hours-of-debate/article_ff7e1a1c-ea48-5a16-8c69-95b941687e45.html)
- CEO, Missouri Trucking Association. Personal Communication. (November 11, 2019).
- Cole, E. (2019, November 10). Housing crisis severe for city’s poor. *Jefferson City News Tribune*. <https://www.newtribune.com/news/news/story/2019/nov/10/housing-crisis-severe-for-capital-citys-poor/803554/>
- Crowley B. (2019, October 2). FEMA will reimburse counties for repairing flood-damaged infrastructure. *Booneville Daily News*. Retrieved from <https://www.boonevilledailynews.com/news/20191002/fema-will-reimburse-counties-for-repairing-flood-damaged-infrastructure>
- DiNitto, M. (2019, September 11). Why and how small business owners should protect themselves with commercial insurance. *The Business Journal*. <https://www.bizjournals.com/bizjournals/news/2017/09/11/why-and-how-small-business-owners-should-protect.html>
- Director, Pioneer Trails Regional Planning Commission. Personal Communication. (November 22, 2019).
- Director, Southeast Missouri Regional Planning Commission. Personal Communication. (December 2, 2019).
- Executive Association, Missouri Association of Counties. Personal Communication. (November 4, 2019).



Executive Director, Carroll County Chamber of Commerce. Personal Communication. (November 26, 2019)

Executive Director, Jefferson City Convention & Visitor's Bureau. Personal Communication. (November 15, 2019).

Executive Director, Association of School Principals. Personal Communication. (November 19, 2019).

Executive Director, Missouri Association of RVs and Parks. Personal Communication. (October 31, 2019).

Executive Director, Missouri Travel Alliance. Personal Communication. (November 7, 2019).

Farm Bureau of America. (May 2019). Crop Planting Delays Reach Historic Levels Resulting in High Levels of Uncertainty for 2019. *Market Intel*. Retrieved from <https://www.fb.org/market-intel/crop-planting-delays-reach-historic-levels-resulting-in-high-levels-of-uncertainty>.

Farm Service Agency (FSA) Crop Acreage data by state and county (2019). <https://www.fsa.usda.gov/news-room/efoia/electronic-reading-room/frequently-requested-information/crop-acreage-data/index>.

Federal Emergency Management Agency. (2019). Flood Damage, Missouri 6<sup>th</sup> Congressional District meeting.

Food and Agricultural Policy Research Institute (FAPRI), the University of Missouri. Personal Communication (November 2019).

Geist, Linda University of Missouri Extension (2019, November 6). Continued flooding keeps northwest Missouri farmland underwater. *High Plains Journal*. Retrieved from [https://www.hpj.com/crops/continued-flooding-keeps-northwest-missouri-farmland-underwater/article\\_de27c794-921f-5ba9-83d6-33c76f00471e.html](https://www.hpj.com/crops/continued-flooding-keeps-northwest-missouri-farmland-underwater/article_de27c794-921f-5ba9-83d6-33c76f00471e.html)

Hirsch, C. (2019, November 5). More than \$6.2 million in rebuilding costs reported after Jefferson City tornado. Jefferson City ABC 17 News [Television News]. Replay retrieved from <https://abc17news.com/news/jefferson-city/2019/11/05/more-than-6-2-million-in-project-costs-reported-to-rebuild-after-jefferson-city-tornado/>

Messenger, T. (2019, November 18). As Missouri River remains high Maryland Heights ignores flooding lessons. *St. Louis Post-Dispatch*. Retrieved from [https://www.stltoday.com/news/local/columns/tony-messenger/messenger-as-missouri-river-remains-high-maryland-heights-ignores-flooding/article\\_96fc043c-0701-58b7-aacc-29c03068934d.html](https://www.stltoday.com/news/local/columns/tony-messenger/messenger-as-missouri-river-remains-high-maryland-heights-ignores-flooding/article_96fc043c-0701-58b7-aacc-29c03068934d.html)

Missouri Department of Economic Development (2019). *Missouri Economic Impact Assessment Survey*.

Missouri Disaster Recovery Framework, Economic RSF Annex

Missouri Division of Tourism. (2019). *Missouri Traveler Barometer*. Retrieved from <https://industry.visitmo.com/research/missouri-barometer>

Missouri State Parks. (2019). 2019 Katy Trail Ride – Canceled. Retrieved from <https://mostateparks.com/2019ktride>.

Missouri Economic Research and Information Center. (n.d.). Missouri's Top 50 Employers. Retrieved from <https://meric.mo.gov/industry-research/top-50-employers>.

Peters, B. & Benjamin, B. (2017, May 22). What is in the future for state employees? *Missouri Times*. Retrieved from <https://themissouritimes.com/39278/future-state-employees/>.

Property & Casualty Manager, Missouri Department of Commerce & Insurance, Personal Communication. (November 1, 2019).

Ringgenberg, W., Peek-Asa, C., Donham, K., & Ramirez, M. (2017). Trends and Characteristics of Occupational Suicide and Homicide in Farmers and Agriculture Workers, 1992-2010. *The Journal of Rural Health*, 34(3), 246–253. Doi: 10.1111/jrh.12245.

Risk Management Agency (2019). Crop Insurance data was coordinated through representatives from the United States Department of Agriculture, Risk Management Agency, (2019) <https://www.rma.usda.gov/en/Information-Tools/Summary-of-Business>

Sitter, P. (2019, November 30). Tornado-hit businesses still owe full 2019 property taxes. <https://www.newstribune.com/news/local/story/2019/dec/01/tornado-hit-businesses-still-owe-full-2019-property-taxes/806280/>

Stewart, M. (2019, July 12). Missouri governor signs law pushing back school start date. Retrieved from <https://fox4kc.com/2019/07/12/missouri-governor-signs-law-pushing-back-school-start-date>

Summers. (2019, October 31) As winter weather nears, NW Missouri farmers fear soggy fields will turn into frozen wastelands. Retrieved from <https://fox4kc.com/2019/10/31/as-winter-weather-nears-nw-missouri-farmers-fear-soggy-fields-will-turn-into-frozen-wastelands/>

University of Missouri. (2019, September 3). Facts and Figures. Retrieved from <https://www.umsystem.edu/about-us/facts>

United States Department of Agriculture, Risk Management Agency. (2019). Summary of Business. Retrieved from: <https://www.rma.usda.gov/en/Information-Tools/Summary-of-Business>

United States Department of Agriculture, Economic Research Service (2017). Agricultural Census Data. Retrieved from <https://data.ers.usda.gov/reports.aspx?StateFIPS=29&StateName=Missouri&ID=17854>

United States Department of Commerce, Bureau of Economic Analysis. (2018). GDP and Personal Income, Missouri. Retrieved from <https://apps.bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1>

**END OF THE DOCUMENT**